

=> file reg

FILE 'REGISTRY' ENTERED AT 14:08:21 ON 29 JUL 2003
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FILE 'REGISTRY' ENTERED AT 12:17:23 ON 29 JUL 2003

L1 1116 SEA (LI(L)CO(L)MN(L)O)/ELS
L2 275 SEA L1 (L) 4/ELC.SUB
L3 38 SEA L1 (L) MG/ELS (L) 5/ELC.SUB
L4 4193734 SEA 2/O
L5 88 SEA L2 AND L4
L6 22 SEA L3 AND L4
L7 85679 SEA 1/LI
L8 88 SEA L5 AND L7
L9 22 SEA L6 AND L7

FILE 'ZCA' ENTERED AT 12:28:25 ON 29 JUL 2003

L10 85 SEA L8
L11 8 SEA L9
L12 34 SEA L8/P

FILE 'REGISTRY' ENTERED AT 12:28:54 ON 29 JUL 2003

L13 9507 SEA 0.008<=MN<=0.18
L14 26 SEA L8 AND L13
L15 16174 SEA 0.001<=CO<=0.992
L16 87 SEA L8 AND L15
L17 26 SEA L14 AND L16

FILE 'ZCA' ENTERED AT 12:32:41 ON 29 JUL 2003

L18 31 SEA L17
L19 QUE CATHOD## OR (NEG# OR NEGATIV?)(2A)ELECTROD##
L20 183515 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
OR GALVANI? OR WET OR DRY OR PRIMARY OR SECONDARY)(2A)(CE
LL OR CELLS)
L21 28 SEA L18 AND L19
L22 28 SEA L18 AND L20
L23 28 SEA L12 AND L19
L24 29 SEA L12 AND L20
L25 112884 SEA (ALK# OR ALKALI#)(2A)(SOLN# OR SOLUTION? OR AQ# OR
AQUEOUS?)
L26 2 SEA (L12 OR L18 OR L21 OR L22 OR L23 OR L24) AND L25

FILE 'LCA' ENTERED AT 13:31:28 ON 29 JUL 2003

L27 940 SEA OXYGENA? OR O2 OR (OXYGEN# OR O)(2A)(ATMOS? OR ATM#
OR STREAM? OR FLOW# OR FLOWED OR FLOWING# OR GAS# OR
GASEOUS? OR GASIF? OR INTRODUC? OR INJECT? OR SYRING? OR
NEEDL? OR JET# OR APPLY? OR APPLIED OR APPLICATION? OR

TREAT? OR PRETREAT? OR PROCESS? OR CONDITION? OR
PRECONDITION?)

L28 2231 SEA AIR OR AERAT? OR AERIF?

FILE 'REGISTRY' ENTERED AT 13:38:06 ON 29 JUL 2003

E OXYGEN/CN

L29 1 SEA OXYGEN/CN

FILE 'ZCA' ENTERED AT 13:44:08 ON 29 JUL 2003

L30 1304213 SEA L29 OR L27 OR L28

L31 12 SEA (L12 OR L18 OR L21 OR L22 OR L23 OR L24) AND L30

L32 433170 SEA NEUTRAL?

L33 0 SEA (L12 OR L18 OR L21 OR L22 OR L23 OR L24) AND L32

L34 22 SEA L11 OR L26 OR L31

L35 35 SEA (L18 OR L21 OR L22 OR L23 OR L24) NOT L34

L36 36 SEA (L12 OR L18 OR L21 OR L22 OR L23 OR L24) NOT L34

L37 76 SEA L10 AND L19

L38 77 SEA L10 AND L20

L39 75 SEA L37 AND L38

L40 2 SEA L39 AND L25

L41 13 SEA L39 AND L30

L42 0 SEA L39 AND L32

L43 6 SEA (L40 OR L41) NOT (L34 OR L36)

L44 6 SEA (L40 OR L41) NOT L34

=> file zca

FILE 'ZCA' ENTERED AT 14:08:39 ON 29 JUL 2003

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=> d l34 1-22 cbib abs hitstr hitind

L34 ANSWER 1 OF 22 ZCA COPYRIGHT 2003 ACS on STN

139:24131 Secondary lithium battery. Okochi, Masaya; Kawatate, Yutaka; Tanaka, Ryoichi; Inoue, Kaoru (Matsushita Electric Industrial Co., Ltd., Japan). PCT Int. Appl. WO 2003049216 A1 20030612, 31 pp. DESIGNATED STATES: W: CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2002-JP12283 20021125. PRIORITY: JP 2001-373271 20011206.

AB The battery has a cathode contg. an active mass and a binder, an anode, and a nonaq. electrolyte soln.; where the cathode active mass comprises a Li-contg. composite oxide: $\text{Li}_a(\text{Co}_{1-x}\text{Mg}_x\text{Mn}_y)\text{bO}_c$ (M = Ni, Mn and/or Al; a = 0-1.05; x = 0.005-0.025; y = 0-0.25; b = 0.85-1.1; and c = 1.8-2.1).

IT 536977-05-6, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.93}\text{LiMg}_{0.02}\text{Mn}_{0.05}\text{O}_2$) 536977-06-7, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.83}\text{LiMg}_{0.02}\text{Mn}_{0.15}\text{O}_2$) 536977-07-8, Cobalt lithium magnesium manganese oxide

(Co_{0.73}LiMg_{0.02}Mn_{0.25}O₂) **536977-08-9**, Cobalt lithium
 magnesium manganese oxide (Co_{0.68}LiMg_{0.02}Mn_{0.30}O₂)
536977-18-1, Cobalt lithium magnesium manganese oxide
 (Co_{0.94}LiMg_{0.01}Mn_{0.05}O₂) **536977-19-2**, Cobalt lithium
 magnesium manganese oxide (Co_{0.84}LiMg_{0.01}Mn_{0.15}O₂)
536977-20-5, Cobalt lithium magnesium manganese oxide
 (Co_{0.74}LiMg_{0.01}Mn_{0.25}O₂) **536977-21-6**, Cobalt lithium
 magnesium manganese oxide (Co_{0.69}LiMg_{0.01}Mn_{0.30}O₂)
 (comps. of lithium cobalt magnesium oxides in cathodes for
 secondary lithium batteries)

RN 536977-05-6 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.93}LiMg_{0.02}Mn_{0.05}O₂)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.93	7440-48-4
Mn	0.05	7439-96-5
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 536977-06-7 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.83}LiMg_{0.02}Mn_{0.15}O₂)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.83	7440-48-4
Mn	0.15	7439-96-5
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 536977-07-8 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.73}LiMg_{0.02}Mn_{0.25}O₂)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.73	7440-48-4
Mn	0.25	7439-96-5
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 536977-08-9 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.68}LiMg_{0.02}Mn_{0.30}O₂)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.68	7440-48-4
Mn	0.3	7439-96-5
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 536977-18-1 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.94}LiMg_{0.01}Mn_{0.05}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.94	7440-48-4
Mn	0.05	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 536977-19-2 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.84}LiMg_{0.01}Mn_{0.15}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.84	7440-48-4
Mn	0.15	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 536977-20-5 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.74}LiMg_{0.01}Mn_{0.25}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.74	7440-48-4
Mn	0.25	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 536977-21-6 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.69}LiMg_{0.01}Mn_{0.30}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.69	7440-48-4
Mn	0.3	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2
IC	ICM H01M004-58	
	ICS H01M004-02; H01M004-62; H01M010-40	
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)	
IT	12190-79-3, Cobalt lithium oxide (CoLiO ₂)	144419-56-7, Cobalt
	lithium magnesium oxide (Co _{0.95} LiMg _{0.05} O ₂)	198213-69-3, Cobalt
	lithium magnesium oxide (Co _{0.99} LiMg _{0.01} O ₂)	198213-70-6, Cobalt
	lithium magnesium oxide (Co _{0.98} LiMg _{0.02} O ₂)	198213-71-7, Cobalt
	lithium magnesium oxide (Co _{0.97} LiMg _{0.03} O ₂)	372491-79-7, Aluminum
	cobalt lithium magnesium oxide (Al _{0.05} Co _{0.94} LiMg _{0.01} O ₂)	
	536976-96-2, Cobalt lithium magnesium nickel oxide	
	(Co _{0.93} LiMg _{0.02} Ni _{0.05} O ₂)	536976-97-3, Cobalt lithium magnesium
	nickel oxide (Co _{0.88} LiMg _{0.02} Ni _{0.10} O ₂)	536976-98-4, Cobalt lithium
	magnesium nickel oxide (Co _{0.78} LiMg _{0.02} Ni _{0.20} O ₂)	536976-99-5, Cobalt
	lithium magnesium nickel oxide (Co _{0.73} LiMg _{0.02} Ni _{0.25} O ₂)	
	536977-00-1, Cobalt lithium magnesium nickel oxide	
	(Co _{0.68} LiMg _{0.02} Ni _{0.30} O ₂)	536977-01-2, Aluminum cobalt lithium
	magnesium oxide (Al _{0.05} Co _{0.93} LiMg _{0.02} O ₂)	536977-02-3, Aluminum
	cobalt lithium magnesium oxide (Al _{0.15} Co _{0.83} LiMg _{0.02} O ₂)	
	536977-03-4, Aluminum cobalt lithium magnesium oxide	
	(Al _{0.25} Co _{0.73} LiMg _{0.02} O ₂)	536977-04-5, Aluminum cobalt lithium
	magnesium oxide (Al _{0.3} Co _{0.68} LiMg _{0.02} O ₂)	536977-05-6,
	Cobalt lithium magnesium manganese oxide (Co _{0.93} LiMg _{0.02} Mn _{0.05} O ₂)	
	536977-06-7, Cobalt lithium magnesium manganese oxide	
	(Co _{0.83} LiMg _{0.02} Mn _{0.15} O ₂)	536977-07-8, Cobalt lithium
	magnesium manganese oxide (Co _{0.73} LiMg _{0.02} Mn _{0.25} O ₂)	
	536977-08-9, Cobalt lithium magnesium manganese oxide	
	(Co _{0.68} LiMg _{0.02} Mn _{0.30} O ₂)	536977-09-0, Cobalt lithium magnesium
	nickel oxide (Co _{0.94} LiMg _{0.01} Ni _{0.05} O ₂)	536977-10-3, Cobalt lithium
	magnesium nickel oxide (Co _{0.89} LiMg _{0.01} Ni _{0.10} O ₂)	536977-11-4, Cobalt
	lithium magnesium nickel oxide (Co _{0.79} LiMg _{0.01} Ni _{0.20} O ₂)	
	536977-12-5, Cobalt lithium magnesium nickel oxide	
	(Co _{0.74} LiMg _{0.01} Ni _{0.25} O ₂)	536977-13-6, Cobalt lithium magnesium
	nickel oxide (Co _{0.69} LiMg _{0.01} Ni _{0.30} O ₂)	536977-14-7, Aluminum cobalt
	lithium magnesium oxide (Al _{0.15} Co _{0.84} LiMg _{0.01} O ₂)	536977-15-8,
	Aluminum cobalt lithium magnesium oxide (Al _{0.25} Co _{0.74} LiMg _{0.01} O ₂)	
	536977-17-0, Aluminum cobalt lithium magnesium oxide	
	(Al _{0.3} Co _{0.69} LiMg _{0.01} O ₂)	536977-18-1, Cobalt lithium
	magnesium manganese oxide (Co _{0.94} LiMg _{0.01} Mn _{0.05} O ₂)	
	536977-19-2, Cobalt lithium magnesium manganese oxide	
	(Co _{0.84} LiMg _{0.01} Mn _{0.15} O ₂)	536977-20-5, Cobalt lithium
	magnesium manganese oxide (Co _{0.74} LiMg _{0.01} Mn _{0.25} O ₂)	
	536977-21-6, Cobalt lithium magnesium manganese oxide	

(Co_{0.69}LiMg_{0.01}Mn_{0.30}O₂)

(comps. of lithium cobalt magnesium oxides in cathodes for secondary lithium batteries)

L34 ANSWER 2 OF 22 ZCA COPYRIGHT 2003 ACS on STN

138:404125 Preparation and crystal structure of Li_{0.60}[MgxCoymn_{1-x-y}]O₂ with the layered O₂ structure. Wei, Mi; Zhang, Hao; Yang, Wen-Sheng; Duan, Xue (Ministry of Education, Key Lab. of Sci. and Technol. of Controllable Chem. Reactions, Beijing University of Chemical Technology, Beijing, 100029, Peop. Rep. China). Wuji Huaxue Xuebao, 19(3), 267-272 (Chinese) 2003. CODEN: WHUXEO. ISSN: 1001-4861. Publisher: Wuji Huaxue Xuebao Bianjibu.

AB Precursors of the type Na_{0.60}[MgxCoymn_{1-x-y}]O₂ were prepd. by solid state reaction of Na₂CO₃ and the composite metal oxides, then the layered materials of Li_{0.60}[MgxCoymn_{1-x-y}]O₂ were obtained by ion-exchange. Both the stoichiometric ratio of Na₂CO₃ to the composite metal oxides and the dopant content have strong influence on the structures of the precursors. In the case of Mg dopant, the structure of Na_{0.60}[MgxMn_{1-x}]O₂ was affected by the Mg content. Layered P2 structure was obtained when x = 0.05, while both P2 and orthorhombic structures were obtained when x .gtoreq. 0.10. For the compds. of Na_{0.60}[MgxCoymn_{1-x-y}]O₂ (x = 0.05, 0.05 .ltoreq. y .ltoreq. 0.20), which have two metal dopants, the Co content has different effects on the structure. Both P2 and P3 layered structures were generated with low content of Co (y = 0.05). With the increase of Co content, the intensity of the diffraction peaks of P3 structure decreased, while those of P2 increased. Pure P2 structure was obtained at y = 0.20. The materials of Li_{0.60}[MgxCoymn_{1-x-y}]O₂ possess plate or bar-like morphol.

IT 530739-82-3, Cobalt lithium magnesium manganese oxide (Co_{0.05}-0.2Li_{0.6}Mg_{0.05}Mn_{0.75}-0.9O₂)

(Prepn. and crystal structure of Li_{0.60}[MgxCoymn_{1-x-y}]O₂ with the layered O₂ structure of battery cathode)

RN 530739-82-3 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.05}-0.2Li_{0.6}Mg_{0.05}Mn_{0.75}-0.9O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.05 - 0.2	7440-48-4
Mn	0.75 - 0.9	7439-96-5
Mg	0.05	7439-95-4
Li	0.6	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 530739-82-3, Cobalt lithium magnesium manganese oxide (Co_{0.05}-0.2Li_{0.6}Mg_{0.05}Mn_{0.75}-0.9O₂)

(Prepn. and crystal structure of Li_{0.60}[MgxCoymn_{1-x-y}]O₂ with the layered O₂ structure of battery cathode)

L34 ANSWER 3 OF 22 ZCA COPYRIGHT 2003 ACS on STN

138:280224 Application of combinatorial process to $\text{LiCo}_{1-x}\text{Mn}_x\text{O}_2$ (0.1 to 0.2) powder synthesis. Yanase, Ikuo; Ohtaki, Takugo; Watanabe, Mamoru (National Institute for Research in Inorganic Materials, Ibaraki, Tsukuba, 305-0044, Japan). Solid State Ionics, 151(1-4), 189-196 (English) 2002. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..

AB Combinatorial process was applied to the synthesis of layered Li Co Mn oxides using a combinatorial robot system in prep. mixts. of liq. samples and using a combinatorial XRD app. in studying powders. $\text{LiCo}_{1-x}\text{Mn}_x\text{O}_2$ ($x = 0.0, 0.1, 0.2$) single phases were synthesized at 1073 K for 5 h in air using LiOH, $\text{Co}(\text{CH}_3\text{COO})_2$ and $\text{Mn}(\text{CH}_3\text{COO})_2$ aq. solns. with molar ratio of $\text{Li}/(\text{Co}+\text{Mn}) = 1.3$ in mixed solns. The 16 heated samples in holes of 5-mm diam. and 2-mm depth of a Pt pallet with a size of 35.times.35.times.3 mm were studied one by one automatically using a combinatorial powder XRD (CrK.alpha.) app. with position-sensitive diffraction counter (PSPC). The device spent 2 min to measure one sample. The results were in good agreement with that obtained by powder XRD (CuK.alpha.) with a goniometer.

IT **118819-08-2P**, Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{LiMn}_{0.5}\text{O}_2$) **118819-39-9P**, Cobalt lithium manganese oxide ($\text{Co}_{0.8}\text{LiMn}_{0.2}\text{O}_2$) **118819-40-2P**, Cobalt lithium manganese oxide ($\text{Co}_{0.7}\text{LiMn}_{0.3}\text{O}_2$) **134398-47-3P**, Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) **503438-74-2P**, Cobalt lithium manganese oxide ($\text{Co}_{0.6}\text{LiMn}_{0.4}\text{O}_2$) (prepn. by combinatorial process and lattice parameter)

RN 118819-08-2 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{LiMn}_{0.5}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

RN 118819-39-9 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.8}\text{LiMn}_{0.2}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.8	7440-48-4
Mn	0.2	7439-96-5
Li	1	7439-93-2

RN 118819-40-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.7}LiMn_{0.3}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.7	7440-48-4
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 134398-47-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

RN 503438-74-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.6}LiMn_{0.4}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.6	7440-48-4
Mn	0.4	7439-96-5
Li	1	7439-93-2

CC 78-2 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75

IT 12190-79-3P, Cobalt lithium oxide (CoLiO₂) **118819-08-2P**,
Cobalt lithium manganese oxide (Co_{0.5}LiMn_{0.5}O₂) **118819-39-9P**,
Cobalt lithium manganese oxide (Co_{0.8}LiMn_{0.2}O₂)
118819-40-2P, Cobalt lithium manganese oxide
(Co_{0.7}LiMn_{0.3}O₂) **134398-47-3P**, Cobalt lithium manganese
oxide (Co_{0.9}LiMn_{0.1}O₂) **503438-74-2P**, Cobalt lithium
manganese oxide (Co_{0.6}LiMn_{0.4}O₂)
(prep. by combinatorial process and lattice parameter)

L34 ANSWER 4 OF 22 ZCA COPYRIGHT 2003 ACS on STN

138:224204 Battery. Adachi, Momoe; Fujita, Shigeru; Endo, Takuya;
Iwakoshi, Yasunobu; Shibamoto, Goro (Sony Corporation, Japan). PCT
Int. Appl. WO 2003019713 A1 20030306, 162 pp. DESIGNATED STATES: W:
CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2.

APPLICATION: WO 2002-JP8498 20020823. PRIORITY: JP 2001-254547 20010824.

AB The battery has a cathode, contg. a Li composite oxide active mass having Li and/or Ni and O, an anode contg. a Li intercalating material and/or Li in its active mass, and an electrolyte-impregnated separator in between; where the battery has charging voltage .gtoreq.4.25 V, and a total amt. of Li carbonate and Li sulfate is 1.0 mass % of the cathode active mass. Preferably, the electrolyte has the concn. of a proton impurity .ltoreq.20 ppm and water .ltoreq.20 ppm.

IT **500867-92-5**, Cobalt lithium magnesium manganese oxide

(Co_{0.8}LiMg_{0.05}Mn_{0.15}O₂)

(secondary lithium batteries contg. electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concn. of Li₂CO₃ and Li₂SO₄)

RN 500867-92-5 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.8}LiMg_{0.05}Mn_{0.15}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Mn	0.15	7439-96-5
Mg	0.05	7439-95-4
Li	1	7439-93-2

IC ICM H01M010-40

ICS H01M004-02; H01M004-58; H01M004-40; H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate
108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate
12031-65-1, Lithium nickel oxide (LiNiO₂) 113066-92-5, Cobalt
lithium nickel oxide (Co_{0.9}LiNi_{0.1}O₂) 118557-79-2, Cobalt iron
lithium oxide (Co_{0.9}Fe_{0.1}LiO₂) 128975-24-6, Lithium manganese
nickel oxide (LiMn_{0.5}Ni_{0.5}O₂) 185746-84-3, Aluminum lithium
magnesium nickel oxide (Al_{0.05}LiMg_{0.05}Ni_{0.9}O₂) 202916-35-6,
Chromium cobalt lithium nickel oxide (Cr_{0.05}Co_{0.2}LiNi_{0.75}O₂)
287718-97-2, Aluminum lithium manganese nickel oxide
(Al_{0.05}LiMn_{0.05}Ni_{0.9}O₂) 346417-97-8, Cobalt lithium manganese
nickel oxide (Co_{0.33}LiMn_{0.33}Ni_{0.33}O₂) 364589-12-8, Aluminum cobalt
lithium titanium oxide (Al_{0.05}Co_{0.9}LiTi_{0.05}O₂) 475637-37-7,
Aluminum cobalt lithium nickel oxide (Al_{0.05}Co_{0.8}LiNi_{0.15}O₂)
478814-69-6, Aluminum cobalt lithium magnesium oxide
(Al_{0.05}Co_{0.9}LiMg_{0.05}O₂) **500867-92-5**, Cobalt lithium
magnesium manganese oxide (Co_{0.8}LiMg_{0.05}Mn_{0.15}O₂) 500867-93-6,
Aluminum iron lithium nickel oxide (Al_{0.15}Fe_{0.05}LiNi_{0.8}O₂)
500867-94-7, Aluminum cobalt lithium nickel oxide
(Al_{0.2}Co_{0.3}LiNi_{0.5}O₂) 500867-98-1, Cobalt lithium magnesium nickel
oxide (Co_{0.45}LiMg_{0.05}Ni_{0.5}O₂) 500867-99-2, Cobalt lithium nickel

titanium oxide ($\text{Co}_{0.35}\text{LiNi}_{0.6}\text{Ti}_{0.05}\text{O}_2$) 500868-00-8, Cobalt iron
 lithium nickel oxide ($\text{Co}_{0.25}\text{Fe}_{0.1}\text{LiNi}_{0.65}\text{O}_2$) 500868-01-9
 500868-02-0 500868-03-1 500868-04-2 500868-05-3 500868-09-7
 500868-10-0 500868-11-1 500868-12-2
 (secondary lithium batteries contg. electrolytes, Li or
 Li-intercalating anodes and Li composite oxide cathodes with
 controlled concn. of Li_2CO_3 and Li_2SO_4)

L34 ANSWER 5 OF 22 ZCA COPYRIGHT 2003 ACS on STN

138:26884 Secondary nonaqueous electrolyte battery. Imachi, Naoki;
 Nakane, Ikuo; Oikawa, Satoshi (Sanyo Electric Co., Ltd., Japan).
 Jpn. Kokai Tokkyo Koho JP 2002358962 A2 20021213, 18 pp.
 (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-164729 20010531.

AB The battery is a Li battery, where the cathode uses a layer
 structured $\text{Li}_x\text{MnCoO}_2$ [0.9 .ltoreq.x .ltoreq.1.1, 0.45 .ltoreq.a
 .ltoreq.0.55, 0.45 .ltoreq.b .ltoreq.0.55, 0.9 <(a+b) .ltoreq.1.1]
 active mass contg. Co Li oxide and/or spinel type Li Mn oxide.

IT **476320-62-4**, Cobalt lithium magnesium manganese oxide
 ($\text{Co}_{0.5}\text{LiMg}_{0.01}\text{Mn}_{0.5}\text{O}_2$) **476320-73-7**, Cobalt lithium
 magnesium manganese oxide ($\text{Co}_{0.49}\text{LiMg}_{0.02}\text{Mn}_{0.49}\text{O}_2$)
476321-04-7, Cobalt lithium magnesium manganese oxide
 ($\text{Co}_{0.48}\text{LiMg}_{0.05}\text{Mn}_{0.48}\text{O}_2$) **478001-16-0**, Cobalt lithium
 magnesium manganese oxide ($\text{Co}_{0.48}\text{LiMg}_{0.03}\text{Mn}_{0.48}\text{O}_2$)
 (cobalt lithium manganese oxide cathodes contg. lithium cobaltate
 and spinel type lithium manganese oxide for secondary lithium
 batteries)

RN 476320-62-4 ZCA

CN Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.5}\text{LiMg}_{0.01}\text{Mn}_{0.5}\text{O}_2$)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 476320-73-7 ZCA

CN Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.49}\text{LiMg}_{0.02}\text{Mn}_{0.49}\text{O}_2$)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.49	7440-48-4
Mn	0.49	7439-96-5
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 476321-04-7 ZCA
 CN Cobalt lithium magnesium manganese oxide (Co0.48LiMg0.05Mn0.48O2)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.48	7440-48-4
Mn	0.48	7439-96-5
Mg	0.05	7439-95-4
Li	1	7439-93-2

RN 478001-16-0 ZCA
 CN Cobalt lithium magnesium manganese oxide (Co0.48LiMg0.03Mn0.48O2)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.48	7440-48-4
Mn	0.48	7439-96-5
Mg	0.03	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-58
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt
 lithium oxide (CoLiO2) 118819-08-2, Cobalt lithium manganese oxide
 (Co0.5LiMn0.5O2) 476320-37-3, Cobalt lithium manganese titanium
 oxide (Co0.5LiMn0.5Ti0.01O2) 476320-49-7, Aluminum cobalt lithium
 manganese oxide (Al0.01Co0.5LiMn0.5O2) **476320-62-4**, Cobalt
 lithium magnesium manganese oxide (Co0.5LiMg0.01Mn0.5O2)
 476320-70-4, Aluminum cobalt lithium manganese oxide
 (Al0.02Co0.49LiMn0.49O2) **476320-73-7**, Cobalt lithium
 magnesium manganese oxide (Co0.49LiMg0.02Mn0.49O2) 476320-77-1,
 Cobalt lithium manganese tin oxide (Co0.49LiMn0.49Sn0.02O2)
 476320-79-3, Cobalt lithium manganese titanium oxide
 (Co0.49LiMn0.49Ti0.02O2) 476320-80-6, Cobalt lithium manganese
 zirconium oxide (Co0.49LiMn0.49Zr0.02O2) 476320-86-2, Cobalt
 lithium manganese titanium oxide (Co0.48LiMn0.48Ti0.03O2)
 476320-89-5, Cobalt lithium manganese titanium oxide
 (Co0.48LiMn0.48Ti0.05O2) 476320-95-3, Aluminum cobalt lithium
 manganese oxide (Al0.05Co0.48LiMn0.48O2) **476321-04-7**,
 Cobalt lithium magnesium manganese oxide (Co0.48LiMg0.05Mn0.48O2)
 478001-11-5, Cobalt lithium manganese oxide (Co0.55LiMn0.45O2)
 478001-12-6, Cobalt lithium manganese oxide (Co0.52LiMn0.48O2)
 478001-13-7, Cobalt lithium manganese oxide (Co0.48LiMn0.52O2)
 478001-14-8, Cobalt lithium manganese oxide (Co0.45LiMn0.55O2)
 478001-15-9, Aluminum cobalt lithium manganese oxide

(Al_{0.03}Co_{0.48}LiMn_{0.48}O₂) **478001-16-0**, Cobalt lithium magnesium manganese oxide (Co_{0.48}LiMg_{0.03}Mn_{0.48}O₂) (cobalt lithium manganese oxide cathodes contg. lithium cobaltate and spinel type lithium manganese oxide for secondary lithium batteries)

L34 ANSWER 6 OF 22 ZCA COPYRIGHT 2003 ACS on STN

137:387175 Nonaqueous electrolyte lithium secondary battery. Imachi, Naoki; Nakane, Ikuro; Narukawa, Satoshi (Japan). U.S. Pat. Appl. Publ. US 2002182504 A1 20021205, 17 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-158019 20020531. PRIORITY: JP 2001-164728 20010531.

AB A nonaq. electrolyte secondary battery according to the invention comprises a pos. electrode contg. a pos. electrode active material including lithium contg. composite oxide having a layer crystal structure represented by a general formula of $\text{Li}_x\text{Mn}_a\text{Co}_b\text{Mg}_c\text{O}_2$ ($0.9 < x < 1.1$, $0.45 < a < 0.55$, $0.45 < b < 0.55$, $0 < c < 0.05$ and $0.9 < a+b+c < 1.1$ are set and M is at least one kind selected from Al, Mg, Sn, Ti and Zr), a neg. electrode contg. a neg. electrode active material capable of intercalating and deintercalating lithium ion, a separator for sepg. the pos. electrode from the neg. electrode, and a nonaq. electrolyte.

IT **476320-22-6**, Cobalt lithium magnesium manganese oxide (Co_{0.45-0.55}Li_{0.9-1.1}Mg_{0-0.05}Mn_{0.45-0.55}O₂) (nonaq. electrolyte lithium secondary battery)

RN 476320-22-6 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.45-0.55}Li_{0.9-1.1}Mg_{0-0.05}Mn_{0.45-0.55}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.45 - 0.55	7440-48-4
Mn	0.45 - 0.55	7439-96-5
Mg	0 - 0.05	7439-95-4
Li	0.9 - 1.1	7439-93-2

IT **476320-57-7P**, Cobalt lithium magnesium manganese oxide (Co_{0.55}LiMg_{0.01}Mn_{0.45}O₂) **476320-59-9P**, Cobalt lithium magnesium manganese oxide (Co_{0.52}LiMg_{0.01}Mn_{0.48}O₂) **476320-62-4P**, Cobalt lithium magnesium manganese oxide (Co_{0.5}LiMg_{0.01}Mn_{0.5}O₂) **476320-64-6P**, Cobalt lithium magnesium manganese oxide (Co_{0.48}LiMg_{0.01}Mn_{0.52}O₂) **476320-66-8P**, Cobalt lithium magnesium manganese oxide (Co_{0.45}LiMg_{0.01}Mn_{0.55}O₂) **476320-73-7P**, Cobalt lithium magnesium manganese oxide (Co_{0.49}LiMg_{0.02}Mn_{0.49}O₂) **476321-01-4P**, Cobalt lithium magnesium manganese oxide (Co_{0.49}LiMg_{0.03}Mn_{0.49}O₂) **476321-04-7P**, Cobalt lithium magnesium manganese oxide (Co_{0.48}LiMg_{0.05}Mn_{0.48}O₂) (nonaq. electrolyte lithium secondary battery)

RN 476320-57-7 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.55}LiMg_{0.01}Mn_{0.45}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.55	7440-48-4
Mn	0.45	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 476320-59-9 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.52}LiMg_{0.01}Mn_{0.48}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.52	7440-48-4
Mn	0.48	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 476320-62-4 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.5}LiMg_{0.01}Mn_{0.5}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 476320-64-6 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.48}LiMg_{0.01}Mn_{0.52}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.48	7440-48-4
Mn	0.52	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 476320-66-8 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.45}LiMg_{0.01}Mn_{0.55}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.45	7440-48-4
Mn	0.55	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 476320-73-7 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.49}LiMg_{0.02}Mn_{0.49}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.49	7440-48-4
Mn	0.49	7439-96-5
Mg	0.02	7439-95-4
Li	1	7439-93-2

RN 476321-01-4 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.49}LiMg_{0.03}Mn_{0.49}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.49	7440-48-4
Mn	0.49	7439-96-5
Mg	0.03	7439-95-4
Li	1	7439-93-2

RN 476321-04-7 ZCA

CN Cobalt lithium magnesium manganese oxide (Co_{0.48}LiMg_{0.05}Mn_{0.48}O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.48	7440-48-4
Mn	0.48	7439-96-5
Mg	0.05	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-50
ICS H01M004-52
NCL 429231100; 429224000; 429231300; 429231500; 429231600
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 476320-20-4, Aluminum cobalt lithium manganese oxide
(Al₀-0.05Co_{0.45}-0.55Li_{0.9}-1.1Mn_{0.45}-0.55O₂) **476320-22-6**,
Cobalt lithium magnesium manganese oxide (Co_{0.45}-0.55Li_{0.9}-1.1Mg₀-
0.05Mn_{0.45}-0.55O₂) 476320-25-9, Cobalt lithium manganese tin oxide
(Co_{0.45}-0.55Li_{0.9}-1.1Mn_{0.45}-0.55Sn₀-0.05O₂) 476320-27-1, Cobalt
lithium manganese titanium oxide (Co_{0.45}-0.55Li_{0.9}-1.1Mn_{0.45}-0.55Ti₀-
0.05O₂) 476320-30-6, Cobalt lithium manganese zirconium oxide
(Co_{0.45}-0.55Li_{0.9}-1.1Mn_{0.45}-0.55Zr₀-0.05O₂)
(nonaq. electrolyte lithium secondary battery)
IT 476320-32-8P, Cobalt lithium manganese titanium oxide
(Co_{0.5}LiMn_{0.45}Ti_{0.01}O₂) 476320-34-0P, Cobalt lithium manganese
titanium oxide (Co_{0.52}LiMn_{0.48}Ti_{0.01}O₂) 476320-37-3P, Cobalt
lithium manganese titanium oxide (Co_{0.5}LiMn_{0.5}Ti_{0.01}O₂)
476320-40-8P, Cobalt lithium manganese titanium oxide
(Co_{0.48}LiMn_{0.52}Ti_{0.01}O₂) 476320-42-0P, Cobalt lithium manganese
titanium oxide (Co_{0.45}LiMn_{0.55}Ti_{0.01}O₂) 476320-45-3P, Aluminum
cobalt lithium manganese oxide (Al_{0.01}Co_{0.55}LiMn_{0.45}O₂)
476320-47-5P, Aluminum cobalt lithium manganese oxide
(Al_{0.01}Co_{0.52}LiMn_{0.48}O₂) 476320-49-7P, Aluminum cobalt lithium
manganese oxide (Al_{0.01}Co_{0.5}LiMn_{0.5}O₂) 476320-51-1P, Aluminum
cobalt lithium manganese oxide (Al_{0.01}Co_{0.48}LiMn_{0.52}O₂)
476320-54-4P, Aluminum cobalt lithium manganese oxide
(Al_{0.01}Co_{0.45}LiMn_{0.55}O₂) **476320-57-7P**, Cobalt lithium
magnesium manganese oxide (Co_{0.55}LiMg_{0.01}Mn_{0.45}O₂)
476320-59-9P, Cobalt lithium magnesium manganese oxide
(Co_{0.52}LiMg_{0.01}Mn_{0.48}O₂) **476320-62-4P**, Cobalt lithium
magnesium manganese oxide (Co_{0.5}LiMg_{0.01}Mn_{0.5}O₂)
476320-64-6P, Cobalt lithium magnesium manganese oxide
(Co_{0.48}LiMg_{0.01}Mn_{0.52}O₂) **476320-66-8P**, Cobalt lithium
magnesium manganese oxide (Co_{0.45}LiMg_{0.01}Mn_{0.55}O₂) 476320-70-4P,
Aluminum cobalt lithium manganese oxide (Al_{0.02}Co_{0.49}LiMn_{0.49}O₂)
476320-73-7P, Cobalt lithium magnesium manganese oxide
(Co_{0.49}LiMg_{0.02}Mn_{0.49}O₂) 476320-77-1P, Cobalt lithium manganese
tin oxide (Co_{0.49}LiMn_{0.49}Sn_{0.02}O₂) 476320-79-3P, Cobalt lithium
manganese titanium oxide (Co_{0.49}LiMn_{0.49}Ti_{0.02}O₂) 476320-80-6P,
Cobalt lithium manganese zirconium oxide (Co_{0.49}LiMn_{0.49}Zr_{0.02}O₂)
476320-86-2P, Cobalt lithium manganese titanium oxide
(Co_{0.48}LiMn_{0.48}Ti_{0.03}O₂) 476320-89-5P, Cobalt lithium manganese
titanium oxide (Co_{0.48}LiMn_{0.48}Ti_{0.05}O₂) 476320-93-1P, Aluminum
cobalt lithium manganese oxide (Al_{0.03}Co_{0.49}LiMn_{0.49}O₂)
476320-95-3P, Aluminum cobalt lithium manganese oxide
(Al_{0.05}Co_{0.48}LiMn_{0.48}O₂) **476321-01-4P**, Cobalt lithium
magnesium manganese oxide (Co_{0.49}LiMg_{0.03}Mn_{0.49}O₂)
476321-04-7P, Cobalt lithium magnesium manganese oxide
(Co_{0.48}LiMg_{0.05}Mn_{0.48}O₂)
(nonaq. electrolyte lithium secondary battery)

137:96276 Cathode active material and nonaqueous electrolyte secondary battery. Tanaka, Takehiko; Hosoya, Yosuke; Yamamoto, Yoshikatsu; Suzuki, Kiyohiko; Koga, Keizo (Sony Corporation, Japan). PCT Int. Appl. WO 2002054512 A1 20020711, 62 pp. DESIGNATED STATES: W: CN, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP11303 20011221. PRIORITY: JP 2000-403455 20001228; JP 2000-403460 20001228; JP 2000-403463 20001228.

AB The material comprises a composite metal oxide compd. of formula: $\text{Li}_m\text{M}_x\text{M}_1\text{yM}_2\text{zO}_2$ where M = Co, Ni or Mn, M_1 = Al, Cr, V, Fe, Cu, Zn, Sn, Ti, Mg, Sr, B, Ga, In, Si or Ge; M_2 = Mg, Ca, B or Ga; $x=0.9-1$, $y=0.001-0.5$, $z=0-0.5$ and $m \geq 0.5$. Another material comprises a lithium manganese composite oxide of formula $\text{Li}_s\text{Mn}_2\text{-tMatO}_4$ where Ma = Fe, Co, Ni, Cu, Zn, Al, Sn, Cr, V, Ti, Mg, Ca, Sr, B, Ga, In, Si and/or Ge; $s \geq 0.9$, and $t=0.01-0.5$. The material allows the suppression of the temp. increasing when overcharging and maintains the cell capacity at a high level.

IT **372491-98-0**, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$) (substituted; Cathode active material contg. lithium transition metal composite oxide for nonaq. electrolyte secondary battery)

RN 372491-98-0 ZCA

CN Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.01	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-58
ICS H01M010-40; H01M004-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 372491-92-4, Aluminum calcium cobalt lithium oxide ($\text{Al}_{0.01}\text{Ca}_{0.01}\text{Co}_{0.98}\text{LiO}_2$) 372491-97-9, Cobalt lithium magnesium vanadium oxide ($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{V}_{0.01}\text{O}_2$) **372491-98-0**, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$) 372491-99-1, Cobalt iron lithium magnesium oxide ($\text{Co}_{0.98}\text{Fe}_{0.01}\text{LiMg}_{0.01}\text{O}_2$) 372492-00-7, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.01}\text{Co}_{0.98}\text{LiMg}_{0.01}\text{O}_2$) 441311-31-5, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.03}\text{Co}_{0.98}\text{LiMg}_{0.01}\text{O}_2$) 441311-33-7, Cobalt lithium oxide ($\text{Co}_{0.98}\text{LiO}_2$) 441311-34-8, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.05}\text{Co}_{0.98}\text{LiMg}_{0.05}\text{O}_2$) 441311-35-9, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.07}\text{Co}_{0.98}\text{LiMg}_{0.07}\text{O}_2$) (substituted; Cathode active material contg. lithium transition metal composite oxide for nonaq. electrolyte secondary battery)

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136:404311 Process for producing cathode active material for nonaqueous electrolyte secondary battery. Maeda, Hideaki; Fujino, Shoichi; Hatatani, Mitsuaki; Watanabe, Hiroyasu; Sugiyama, Norimiki; Sadamura, Hideaki (Toda Kogyo Corporation, Japan). Eur. Pat. Appl. EP 1211741 A2 20020605, 16 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-309960 20011128. PRIORITY: JP 2000-363511 20001129.

AB A cathode active material for a nonaq. electrolyte secondary cell of the present invention, having a c-axis length of lattice const. of 14.080 to 14.160 .ANG., an av. particle size of 0.1 to 5.0 .mu.m, and a compn. represented by the formula: $\text{LiCo}(1-x-y)\text{Mn}_x\text{Mg}_y\text{O}_2$ wherein x is a no. of 0.008 to 0.18; and y is a no. of 0 to 0.18.

IT **372491-98-0P**, Cobalt lithium magnesium manganese oxide $\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$ **429678-66-0P**, Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.9}\text{LiMg}_{0.05}\text{Mn}_{0.05}\text{O}_2$) (process for producing cathode active material for nonaq. electrolyte secondary battery)

RN 372491-98-0 ZCA

CN Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.01	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

RN 429678-66-0 ZCA

CN Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.9}\text{LiMg}_{0.05}\text{Mn}_{0.05}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.05	7439-96-5
Mg	0.05	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-52

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 142447-11-8P, Cobalt lithium manganese oxide $\text{Co}_{0.85}\text{LiMn}_{0.15}\text{O}_2$

142447-12-9P, Cobalt lithium manganese oxide $\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$

142447-14-1P, Cobalt lithium manganese oxide $\text{Co}_{0.98}\text{LiMn}_{0.02}\text{O}_2$

214536-41-1P, Cobalt lithium manganese oxide 267411-54-1P, Cobalt lithium manganese oxide $\text{Co}_{0.99}\text{LiMn}_{0.01}\text{O}_2$ **372491-98-0P**,

Cobalt lithium magnesium manganese oxide $\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$
 429678-65-9P, Cobalt lithium magnesium manganese oxide
429678-66-0P, Cobalt lithium magnesium manganese oxide
 ($\text{Co}_{0.9}\text{LiMg}_{0.05}\text{Mn}_{0.05}\text{O}_2$)
 (process for producing cathode active material for nonaq.
 electrolyte secondary battery)

L34 ANSWER 9 OF 22 ZCA COPYRIGHT 2003 ACS on STN

136:297394 Solid **electrolyte cell**. Goto, Shuji;
 Hosoya, Mamoru; Endo, Takahiro (Sony Corporation, Japan). Eur. Pat.
 Appl. EP 1195826 A2 20020410, 16 pp. DESIGNATED STATES: R: AT, BE,
 CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT,
 LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-123774
 20011004. PRIORITY: JP 2000-306876 20001005.

AB A solid **electrolyte cell** in which cell
 characteristics are not deteriorated even on overdischarge to the
 cell voltage of 0 V, such that the shape of the cell encapsulated in
 the laminate film is maintained. The cell includes a
cathode contg. a compd. represented by the general formula
 $\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4$ where 0.05 $\leq x \leq 1.2$, 0 $\leq y \leq 0.8$, and M is at least one selected from the group
 consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and
 Nb, an anode and a solid electrolyte. An electrode unit 1 comprised
 of the **cathode** and the anode layered together with
 interposition of the solid electrolyte is encapsulated with a
 laminate film 2.

IT **408331-95-3**, Cobalt lithium manganese oxide ($(\text{Co},\text{Mn})\text{LiO}-2\text{O}_2$)
 (solid **electrolyte cell**)

RN 408331-95-3 ZCA

CN Cobalt lithium manganese oxide ($(\text{Co},\text{Mn})\text{LiO}-2\text{O}_2$) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 1	7439-96-5
Li	0 - 2	7439-93-2

IC ICM H01M004-58

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** solid electrolyte

IT Polyoxyalkylenes, uses

(lithium complex; solid **electrolyte cell**)

IT **Battery cathodes**

Secondary **batteries**

(solid **electrolyte cell**)

IT Fluoropolymers, uses

(solid **electrolyte cell**)

IT 7439-93-2D, Lithium, polyethylene oxide complex 7791-03-9, Lithium

perchlorate 12031-65-1, Lithium nickel oxide linio2 12057-17-9,
 Lithium manganese oxide limn2o4 15365-14-7, Iron lithium phosphate
 felipo4 25322-68-3D, Polyethylene oxide, lithium complex
 116327-69-6, Cobalt lithium nickel oxide Co0.1LiNi0.9O2
 147812-18-8, Iron lithium manganese oxide Fe0.05LiMn1.95O4
 407606-22-8, Chromium iron lithium phosphate (Cr0-0.8Fe0.2-1Li0.05-
 1.2(PO4)) 407606-24-0, Cobalt iron lithium phosphate
 (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper iron lithium
 phosphate (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum
 iron lithium phosphate (Al0-0.8Fe0.2-1Li0.05-1.2(PO4))
 407606-30-8, Gallium iron lithium phosphate (Ga0-0.8Fe0.2-1Li0.05-
 1.2(PO4)) 407606-32-0, Boron iron lithium phosphate
 (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-34-2, Iron lithium manganese
 phosphate (Fe0.2-1Li0.05-1.2Mn0-0.8(PO4)) 407606-36-4, Iron
 lithium nickel phosphate (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4))
 407606-39-7, Iron lithium vanadium phosphate (Fe0.2-1Li0.05-1.2V0-
 0.8(PO4)) 407606-42-2, Iron lithium molybdenum phosphate
 (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) 407606-44-4, Iron lithium titanium
 phosphate (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, Iron
 lithium zinc phosphate (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4))
 407606-49-9, Iron lithium magnesium phosphate (Fe0.2-1Li0.05-1.2Mg0-
 0.8(PO4)) 407606-51-3, Iron lithium niobium phosphate
 (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 408331-94-2, Cobalt lithium nickel
 oxide ((Co,Ni)Li0-2O2) **408331-95-3**, Cobalt lithium
 manganese oxide ((Co,Mn)Li0-2O2) 408331-96-4, Cobalt lithium zinc
 oxide ((Co,Zn)Li0-2O2) 408331-97-5, Cobalt lithium tin oxide
 ((Co,Sn)Li0-2O2) 408331-99-7, Cobalt lithium vanadium oxide
 ((Co,V)Li0-2O2) 408332-00-3, Cobalt lithium titanium oxide
 ((Co,Ti)Li0-2O2) 408332-01-4, Cobalt lithium molybdenum oxide
 ((Co,Mo)Li0-2O2) 408332-02-5, Cobalt lithium tungsten oxide
 ((Co,W)Li0-2O2) 408332-03-6, Cobalt lithium magnesium oxide
 ((Co,Mg)Li0-2O2) 408332-04-7, Cobalt lithium strontium oxide
 ((Co,Sr)Li0-2O2) 408332-05-8, Cobalt lithium niobium oxide
 ((Co,Nb)Li0-2O2) 408332-06-9, Cobalt iron lithium oxide
 ((Co,Fe)Li0-2O2) 408332-07-0, Cobalt copper lithium oxide
 ((Co,Cu)Li0-2O2) 408332-08-1, Aluminum cobalt lithium oxide
 ((Al,Co)Li0-2O2) 408332-09-2, Cobalt lithium borate oxide
 (Co0-1Li0-2(BO2)0-100-2) 408332-10-5, Cobalt gallium lithium oxide
 ((Co,Ga)Li0-2O2) 408332-11-6, Chromium cobalt lithium oxide
 ((Cr,Co)Li0-2O2) 408332-12-7, Calcium cobalt lithium oxide
 ((Ca,Co)Li0-2O2) 408332-13-8, Iron lithium nickel oxide
 ((Fe,Ni)Li0-2O2) 408332-14-9, Copper lithium nickel oxide
 ((Cu,Ni)Li0-2O2) 408332-15-0, Aluminum lithium nickel oxide
 ((Al,Ni)Li0-2O2) 408332-16-1, Lithium nickel borate oxide
 (Li0-2Ni0-1(BO2)0-100-2) 408332-17-2, Gallium lithium nickel oxide
 ((Ga,Ni)Li0-2O2) 408332-18-3, Chromium lithium nickel oxide
 ((Cr,Ni)Li0-2O2) 408332-19-4, Calcium lithium nickel oxide
 ((Ca,Ni)Li0-2O2) 408332-20-7, Lithium manganese nickel oxide
 (Li0-2(Mn,Ni)O2) 408332-21-8, Lithium nickel zinc oxide
 (Li0-2(Ni,Zn)O2) 408332-22-9, Lithium nickel tin oxide
 (Li0-2(Ni,Sn)O2) 408332-23-0, Lithium nickel vanadium
 oxide (Li0-2(Ni,V)O2) 408332-24-1, Lithium nickel

titanium oxide (LiO-2(Ni,Ti)O₂) 408332-25-2, Lithium
 nickel tungsten oxide (LiO-2(Ni,W)O₂) 408332-26-3,
 Lithium molybdenum nickel oxide (LiO-2(Mo,Ni)O₂)
 408332-27-4, Lithium magnesium nickel oxide (LiO-2(Mg,Ni)O₂)
) 408332-28-5, Lithium nickel strontium oxide (LiO-2(Ni,Sr)
 O₂) 408332-29-6, Lithium nickel niobium oxide
 (LiO-2(Ni,Nb)O₂) 408332-30-9, Lithium manganese nickel
 oxide (LiO-2(Mn,Ni)O₂) 408332-31-0, Lithium manganese zinc oxide
 (LiO-2(Mn,Zn)O₂) 408332-32-1, Lithium manganese tin oxide
 (LiO-2(Mn,Sn)O₂) 408332-33-2, Lithium manganese vanadium oxide
 (LiO-2(Mn,V)O₂) 408332-34-3, Lithium manganese titanium oxide
 (LiO-2(Mn,Ti)O₂) 408332-35-4, Lithium manganese molybdenum oxide
 (LiO-2(Mn,Mo)O₂) 408332-36-5, Lithium manganese tungsten oxide
 (LiO-2(Mn,W)O₂) 408332-37-6, Lithium magnesium manganese oxide
 (LiO-2(Mg,Mn)O₂) 408332-38-7, Lithium manganese strontium oxide
 (LiO-2(Mn,Sr)O₂) 408332-39-8, Lithium manganese niobium oxide
 (LiO-2(Mn,Nb)O₂) 408332-40-1, Iron lithium manganese oxide
 ((Fe,Mn)O₂LiO-2O₄) 408332-42-3, Cobalt lithium manganese oxide
 ((Co,Mn)O₂LiO-2O₄) 408332-44-5, Aluminum lithium manganese oxide
 ((Al,Mn)O₂LiO-2O₄) 408332-45-6, Lithium manganese borate oxide
 (LiO-2MnO-2(BO₂)O-2O₄) 408332-46-7, Gallium lithium manganese
 oxide ((Ga,Mn)O₂LiO-2O₄) 408332-47-8, Chromium lithium manganese
 oxide ((Cr,Mn)O₂LiO-2O₄) 408332-48-9, Calcium lithium manganese
 oxide ((Ca,Mn)O₂LiO-2O₄) 408332-58-1, Aluminum cobalt lithium
 nickel oxide (Al_{0.01}Co_{0.98}LiNi_{0.01}O₂) 412351-36-1, Iron lithium
 manganese phosphate (Fe_{0.9}LiMn_{0.1}(PO₄))

(solid **electrolyte cell**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio₂
 21324-40-3, Lithium hexafluorophosphate 24937-79-9, PvdF
 (solid **electrolyte cell**)

L34 ANSWER 10 OF 22 ZCA COPYRIGHT 2003 ACS on STN

136:9021 Layered lithium cobalt manganese oxide powder, and production
 of same.. Takada, Kazunori; Kondo, Shigeo; Watanabe, Jun; Inada,
 Taro; Kajiyama, Akihisa; Takaguchi, Masaru (National Institute for
 Research In Inorganic Materials, Japan; Toda Kogyo Corp.; Japan
 Storage Battery Co., Ltd.; Denki Kagaku Kogyo Co., Ltd.). Jpn.
 Kokai Tokkyo Koho JP 2001328818 A2 20011127, 7 pp. (Japanese).
 CODEN: JKXXAF. APPLICATION: JP 2000-147632 20000519.

AB The layered lithium cobalt manganese oxide powder is formed from
 solid soln. of layered lithium manganese oxide and layered lithium
 cobalt oxide, and has Co:Mn mol ratio (45-55):(55-45). The prodn.
 process includes evapg. Mn salt- and Co salt-contg. soln. to dry,
 firing the obtained solid powder at 700-900.degree. in an O
 -contg. **gas**, mixing the fired powder (or in org. solvent)
 with Li compd., and ion exchanging at 140-400.degree.. The layered
 lithium cobalt manganese oxide powder can be used for lithium
 secondary **battery cathode** active material.

IT 7782-44-7, **Oxygen**, uses
 (controlled atm. contg.; layered lithium cobalt
 manganese oxide powder and prodn. of same)

RN 7782-44-7 ZCA
 CN Oxygen (8CI, 9CI) (CA INDEX NAME)

O=O

IT **118819-08-2P**, Cobalt lithium manganese oxide
 (Co_{0.5}LiMn_{0.5}O₂)
 (powder; layered lithium cobalt manganese oxide powder and prodn.
 of same)
 RN 118819-08-2 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.5}LiMn_{0.5}O₂) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

IC ICM C01G051-00
 ICS H01M004-02; H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 49
 ST layered lithium cobalt manganese oxide powder; **cathode**
 active material lithium secondary **battery**
 IT **Battery cathodes**
 Ion exchange
 (layered lithium cobalt manganese oxide powder and prodn. of
 same)
 IT Secondary **batteries**
 (lithium; layered lithium cobalt manganese oxide powder and
 prodn. of same)
 IT **7782-44-7, Oxygen**, uses
 (controlled atm. contg.; layered lithium cobalt
 manganese oxide powder and prodn. of same)
 IT **118819-08-2P**, Cobalt lithium manganese oxide
 (Co_{0.5}LiMn_{0.5}O₂) 214536-41-1P, Cobalt lithium manganese oxide
 (powder; layered lithium cobalt manganese oxide powder and prodn.
 of same)

L34 ANSWER 11 OF 22 ZCA COPYRIGHT 2003 ACS on STN
 135:360223 Cathode active material containing lithium transition metal
 composite oxide for nonaqueous electrolyte secondary battery.
 Hosoya, Yosuke (Sony Corporation, Japan). Eur. Pat. Appl. EP
 1154503 A1 20011114, 30 pp. DESIGNATED STATES: R: AT, BE, CH, DE,
 DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI,
 RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-110980
 20010507. PRIORITY: JP 2000-139152 20000511.
 AB A nonaq. electrolyte cell having improved cyclic characteristics at

elevated temps. includes a pos. electrode, a neg. electrode and a nonaq. electrolyte. The pos. electrode contains, as a pos. electrode active material, a lithium transition metal composite oxide represented by the general formula $\text{LiCo}_x\text{AyBzO}_2$ where A denotes at least one selected from the group consisting of Al, Cr, V, Mn and Fe, B denotes at least one selected from the group consisting of Mg and Ca and x, y and z are such that $0.9 \leq x < 1$, $0.001 \leq y < 0.05$ and $0.001 < z < 0.05$.

IT 372491-98-0P, Cobalt lithium magnesium manganese oxide
($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$)
(cathode active material contg. lithium transition metal composite oxide for nonaq. electrolyte secondary battery)

RN 372491-98-0 ZCA

CN Cobalt lithium magnesium manganese oxide ($\text{Co}_{0.98}\text{LiMg}_{0.01}\text{Mn}_{0.01}\text{O}_2$)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.01	7439-96-5
Mg	0.01	7439-95-4
Li	1	7439-93-2

IC ICM H01M004-48
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12190-79-3P, Cobalt lithium oxide CoLiO_2 345664-05-3P, Aluminum cobalt lithium oxide ($\text{Al}_{0.01}\text{Co}_{0.99}\text{LiO}_2$) 372491-78-6P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.03}\text{Co}_{0.96}\text{LiMg}_{0.01}\text{O}_2$) 372491-79-7P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.05}\text{Co}_{0.94}\text{LiMg}_{0.01}\text{O}_2$) 372491-80-0P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.07}\text{Co}_{0.92}\text{LiMg}_{0.01}\text{O}_2$) 372491-81-1P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.1}\text{Co}_{0.89}\text{LiMg}_{0.01}\text{O}_2$) 372491-82-2P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.01}\text{Co}_{0.96}\text{LiMg}_{0.03}\text{O}_2$) 372491-83-3P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.01}\text{Co}_{0.94}\text{LiMg}_{0.05}\text{O}_2$) 372491-84-4P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.01}\text{Co}_{0.92}\text{LiMg}_{0.07}\text{O}_2$) 372491-85-5P, Aluminum cobalt lithium magnesium oxide ($\text{Al}_{0.01}\text{Co}_{0.89}\text{LiMg}_{0.1}\text{O}_2$) 372491-87-7P, Chromium cobalt lithium magnesium oxide ($\text{Cr}_{0.01}\text{Co}_{0.98}\text{LiMg}_{0.01}\text{O}_2$) 372491-88-8P, Chromium cobalt lithium magnesium oxide ($\text{Cr}_{0.03}\text{Co}_{0.96}\text{LiMg}_{0.01}\text{O}_2$) 372491-89-9P, Chromium cobalt lithium magnesium oxide ($\text{Cr}_{0.05}\text{Co}_{0.94}\text{LiMg}_{0.01}\text{O}_2$) 372491-90-2P, Chromium cobalt lithium magnesium oxide ($\text{Cr}_{0.07}\text{Co}_{0.92}\text{LiMg}_{0.01}\text{O}_2$) 372491-91-3P, Chromium cobalt lithium magnesium oxide ($\text{Cr}_{0.1}\text{Co}_{0.89}\text{LiMg}_{0.01}\text{O}_2$) 372491-92-4P, Aluminum calcium cobalt lithium oxide ($\text{Al}_{0.01}\text{Ca}_{0.01}\text{Co}_{0.98}\text{LiO}_2$) 372491-93-5P, Aluminum calcium cobalt lithium oxide ($\text{Al}_{0.01}\text{Ca}_{0.03}\text{Co}_{0.96}\text{LiO}_2$) 372491-94-6P, Aluminum calcium cobalt lithium oxide ($\text{Al}_{0.01}\text{Ca}_{0.05}\text{Co}_{0.94}\text{LiO}_2$) 372491-95-7P, Aluminum calcium cobalt lithium oxide

(Al_{0.01}Ca_{0.07}Co_{0.92}LiO₂) 372491-96-8P, Aluminum calcium cobalt lithium oxide (Al_{0.01}Ca_{0.1}Co_{0.89}LiO₂) 372491-97-9P, Cobalt lithium magnesium vanadium oxide (Co_{0.98}LiMg_{0.01}V_{0.01}O₂)
372491-98-0P, Cobalt lithium magnesium manganese oxide (Co_{0.98}LiMg_{0.01}Mn_{0.01}O₂) 372491-99-1P, Cobalt iron lithium magnesium oxide (Co_{0.98}Fe_{0.01}LiMg_{0.01}O₂) 372492-00-7P, Aluminum cobalt lithium magnesium oxide (Al_{0.01}Co_{0.98}LiMg_{0.01}O₂)
 372492-00-7P, Aluminum cobalt lithium magnesium oxide (Al_{0.01}Co_{0.98}LiMg_{0.01}O₂)
 (cathode active material contg. lithium transition metal composite oxide for nonaq. electrolyte secondary battery)

L34 ANSWER 12 OF 22 ZCA COPYRIGHT 2003 ACS on STN

134:375247 Intercalation of Water in P2, T2 and **O2** Structure

Az[CoxNi_{1/3}-xMn_{2/3}]**O2**. Lu, Zhonghua; Dahn, J. R.

(Department of Physics and Department of Chemistry, Dalhousie University, Halifax, NS, B3H 3J5, Can.). Chemistry of Materials, 13(4), 1252-1257 (English) 2001. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB The intercalation of H₂O into P2-Na_{2/3}[CoxNi_{1/3}-xMn_{2/3}]**O2**

(x = 0, 1/6, 1/3) and T2 or **O2** structure

Li_{2/3}[CoxNi_{1/3}-xMn_{2/3}]**O2** (x = 0, 1/6, 1/3) was studied by x-ray diffraction and TGA. H₂O can be intercalated into P2-Na_{2/3}[CoxNi_{1/3}-xMn_{2/3}]**O2** (x = 1/6, 1/3) but not within P2-Na_{2/3}[Ni_{1/3}Mn_{2/3}]**O2**. This difference may be related to the existence of superlattice ordering of Ni atoms, but not Co atoms, within the transition metal layer which apparently induces a very strong interlayer interaction and inhibits the uptake of H₂O. Two H₂O-contg. phases of P2-Na_{2/3}(H₂O)_y[Co_{1/3}Mn_{2/3}]**O2** were found and one, with y apprxeq. 2/3, could be prepd. in pure form. By Rietveld refinement of the x-ray diffraction pattern of P2-Na_{2/3}(H₂O)_{2/3}[Co_{1/3}Mn_{2/3}]**O2**, the compd. still exists in the ideal P2 structure (P6₃/mmc) with the O atoms of the H₂O mol. located on the 2c site. H₂O cannot be intercalated into the corresponding lithiated phases, Li_{2/3}[CoxNi_{1/3}-xMn_{2/3}]**O2** for any value of x that the authors tested (x = 0, 1/6, 1/3).

IT **340153-90-4P**, Cobalt lithium manganese oxide

(Co_{0.33}Li_{0.67}Mn_{0.67}O₂)

(prepn. and x-ray diffraction and attempted intercalation of water)

RN 340153-90-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.33}Li_{0.67}Mn_{0.67}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.33	7440-48-4
Mn	0.67	7439-96-5
Li	0.67	7439-93-2

CC 78-2 (Inorganic Chemicals and Reactions)
 Section cross-reference(s): 75

IT Order
 (nickel superlattice; effect on intercalation of water in P2, T2 and O2 structure $\text{Na}_2[\text{Co}_x\text{Ni}_{1/3-x}\text{Mn}_{2/3}]\text{O}_2$ and $\text{Li}_2[\text{Co}_x\text{Ni}_{1/3-x}\text{Mn}_{2/3}]\text{O}_2$)

IT Intercalation
 (of water in P2, T2 and O2 structured $\text{Na}_2[\text{Co}_x\text{Ni}_{1/3-x}\text{Mn}_{2/3}]\text{O}_2$ and $\text{Li}_2[\text{Co}_x\text{Ni}_{1/3-x}\text{Mn}_{2/3}]\text{O}_2$)

IT 7447-41-8, Lithium chloride, reactions 7790-69-4, Lithium nitrate (for prepn. of $\text{Li}_2[\text{Co}_x\text{Ni}_{1/3-x}\text{Mn}_{2/3}]\text{O}_2$)

IT 497-19-8, Sodium carbonate (Na_2CO_3), reactions 10141-05-6, Cobalt nitrate 10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate (for prepn. of $\text{Na}_2[\text{Co}_x\text{Ni}_{1/3-x}\text{Mn}_{2/3}]\text{O}_2$)

IT 285978-95-2P, Manganese nickel sodium oxide ($\text{Mn}_{0.67}\text{Ni}_{0.33}\text{Na}_{0.67}\text{O}_2$) **340153-90-4P**, Cobalt lithium manganese oxide ($\text{Co}_{0.33}\text{Li}_{0.67}\text{Mn}_{0.67}\text{O}_2$) (prepn. and x-ray diffraction and attempted intercalation of water)

L34 ANSWER 13 OF 22 ZCA COPYRIGHT 2003 ACS on STN

132:188786 Studies of the layered manganese bronzes, $\text{Na}_{2/3}[\text{Mn}_{1-x}\text{Mx}]\text{O}_2$ with M = Co, Ni, Li, and $\text{Li}_{2/3}[\text{Mn}_{1-x}\text{Mx}]\text{O}_2$ prepared by ion-exchange. Paulsen, J. M.; Dahn, J. R. (Department of Physics, Dalhousie University, Halifax, NS, B3H 3J5, Can.). Solid State Ionics, 126(1,2), 3-24 (English) 1999. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..

AB Layered sodium manganese bronzes, $\text{Na}_{2/3}\text{MO}_2$ (M = $\text{Mn}_{1-x}\text{A}_x$, A = Co, Li, Ni) with the P2-structure were studied. A phase diagram (compn.-structure-temp. diagram) for materials synthesized in **air** is presented. Substitution extends the stability region of P2 phases toward lower temps. $\text{Na}_{2/3}\text{MnO}_2$ exhibits a monoclinic distortion. Weakly substituted samples exhibit an orthorhombic distortion of the ideal P2-structure whereas heavily substituted bronzes adopt the ideal P2-structure. Dry samples exhibit larger distortions than samples exposed to **air**. The layered sodium bronzes were used to prep. layered lithium-transition metal oxides by ion-exchange. Layered lithium-manganese oxides with O2-structures were prepd. from these bronzes for the first time. As an example, cryst. $\text{Li}_{2/3}[\text{Ni}_{1/3}\text{Mn}_{2/3}]\text{O}_2$ with the O2 structure was prepd.

IT **259190-79-9P**, Cobalt lithium manganese oxide ($\text{Co}_{0.7}\text{Li}_{0.67}\text{Mn}_{0.3}\text{O}_2$) (bronze; prepn. by ion exchange of sodium manganese bronze, XRD of)

RN 259190-79-9 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.7}\text{Li}_{0.67}\text{Mn}_{0.3}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.7	7440-48-4
Mn	0.3	7439-96-5
Li	0.67	7439-93-2

IT **249915-56-8P**, Cobalt lithium manganese oxide
(Co_{0.15}Li_{0.67}Mn_{0.85}O₂)
(bronze; prepn., XRD, and specific capacity as electrode for Li cell)

RN 249915-56-8 ZCA

CN Cobalt lithium manganese oxide (Co_{0.15}Li_{0.67}Mn_{0.85}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.15	7440-48-4
Mn	0.85	7439-96-5
Li	0.67	7439-93-2

CC 78-2 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 75, 76

IT 114986-73-1DP, Cobalt sodium oxide (CoNa_{0.67}O₂), oxygen-deficient
(bronze; prepn. at high temp. in **air**, XRD, and TGA of)

IT **259190-79-9P**, Cobalt lithium manganese oxide
(Co_{0.7}Li_{0.67}Mn_{0.3}O₂)
(bronze; prepn. by ion exchange of sodium manganese bronze, XRD of)

IT 12190-79-3P, Cobalt lithium oxide (CoLiO₂)
(bronze; prepn. by ion exchange, XRD and TGA, and O₂-O₃ phase transition of)

IT 114986-73-1P, Cobalt sodium oxide (CoNa_{0.67}O₂)
(bronze; prepn. in **air**, XRD, TGA, and ion exchange with lithium bromide)

IT **249915-56-8P**, Cobalt lithium manganese oxide
(Co_{0.15}Li_{0.67}Mn_{0.85}O₂)
(bronze; prepn., XRD, and specific capacity as electrode for Li cell)

L34 ANSWER 14 OF 22 ZCA COPYRIGHT 2003 ACS on STN

131:339408 Layered Li-Mn-oxide with the O₂ structure: a **cathode** material for Li-Ion cells which does not convert to spinel. Paulsen, J. M.; Thomas, C. L.; Dahn, J. R. (Department of Physics, Dalhousie University, Halifax, NS, B3H 3J5, Can.). Journal of the Electrochemical Society, 146(10), 3560-3565 (English) 1999. CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical Society.

AB Layered sodium manganese bronzes having the P2 structure (Na_{2/3}[Li_{1/6}Mn_{5/6}]O₂), were used to prep. layered lithium manganese oxides by ion exchange of Na by Li using LiBr in hexanol.

X-ray diffraction and chem. anal. show that layered $\text{Li}_{2/3}[\text{Li}_{1/6}\text{Mn}_{5/6}]\text{O}_2$ has an **O2** type structure. The arrangement of manganese and oxygen atoms in this phase differs fundamentally from that found in layered LiMnO_2 (**O3** structure), in orthorhombic LiMnO_2 , and in spinel $\text{Li}_2\text{Mn}_2\text{O}_4$ so that conversion to spinel during electrochem. cycling is not expected. $\text{Li}_{2/3}[\text{Li}_{1/6}\text{Mn}_{5/6}]\text{O}_2$ as well as the related $\text{Li}_{2/3}[\text{Li}_{1/18}\text{Mn}_{17/18}]\text{O}_2$ and $\text{Li}_{2/3}[\text{Mn}_{0.85}\text{Co}_{0.15}]\text{O}_2$ have a reversible charge capacity of about 150 mAh/g. During cycling the new **cathode** materials do not convert to spinel, in contrast to the behavior of layered and orthorhombic LiMnO_2 .

IT **249915-56-8P**, Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.67}\text{Mn}_{0.85}\text{O}_2$) **249915-58-0P**, Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.83}\text{Mn}_{0.68}\text{O}_2$) (layered Li-Mn-oxide with **O2** structure as **cathode** material for Li-ion cells which does not convert to spinel)

RN 249915-56-8 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.67}\text{Mn}_{0.85}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.15	7440-48-4
Mn	0.85	7439-96-5
Li	0.67	7439-93-2

RN 249915-58-0 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.83}\text{Mn}_{0.68}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.15	7440-48-4
Mn	0.68	7439-96-5
Li	0.83	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75

ST **battery cathode** lithium manganese oxide

IT **Battery cathodes**
Cation exchange
(layered Li-Mn-oxide with **O2** structure as **cathode** material for Li-ion cells which does not convert to spinel)

IT **Secondary batteries**
(lithium; layered Li-Mn-oxide with **O2** structure as

- cathode** material for Li-ion cells which does not convert to spinel)
- IT 12162-79-7, Lithium manganese oxide LiMnO_2 119000-28-1D, Lithium manganese oxide $\text{Li}_{0.7}\text{MnO}_2$, oxygen-excess (layered Li-Mn-oxide with **O2** structure as **cathode** material for Li-ion cells which does not convert to spinel)
- IT 249915-44-4P, Lithium manganese oxide ($\text{Li}_{0.83}\text{Mn}_{0.83}\text{O}_2$)
 249915-53-5P, Lithium manganese oxide ($\text{Li}_{0.72}\text{Mn}_{0.94}\text{O}_2$)
249915-56-8P, Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.67}\text{Mn}_{0.85}\text{O}_2$) **249915-58-0P**, Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.83}\text{Mn}_{0.68}\text{O}_2$) (layered Li-Mn-oxide with **O2** structure as **cathode** material for Li-ion cells which does not convert to spinel)
- IT 7550-35-8, Lithium bromide (layered Li-Mn-oxide with **O2** structure as **cathode** material for Li-ion cells which does not convert to spinel)
- IT 12438-58-3, Manganese sodium oxide MnNaO_2 111706-06-0D, Manganese sodium oxide $\text{MnNa}_{0.7}\text{O}_2$, oxygen-excess 249915-43-3, Lithium manganese sodium oxide ($\text{Li}_{0.17}\text{Mn}_{0.83}\text{Na}_{0.67}\text{O}_2$) 249915-60-4, Cobalt lithium manganese sodium oxide ($\text{Co}_{0.15}\text{Li}_{0.17}\text{Mn}_{0.68}\text{Na}_{0.67}\text{O}_2$) (precursor; layered Li-Mn-oxide with **O2** structure as **cathode** material for Li-ion cells which does not convert to spinel)
- L34 ANSWER 15 OF 22 ZCA COPYRIGHT 2003 ACS on STN
- 130:245525 Preparation and electrochemical properties of layered lithium-cobalt-manganese oxides. Numata, K.; Yamanaka, S. (Battery Materials Research Laboratory, Mitsui Mining and Smelting Co., Ltd., Takehara, 725-0025, Japan). Solid State Ionics, 118(1,2), 117-120 (English) 1999. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..
- AB The solid solns. $\text{Li}(\text{Co}_{1-x}\text{Li}_x/3\text{Mn}_{2x/3})\text{O}_2$ were prep'd. over the whole compositional range between two kinds of layer structured compds., LiCoO_2 and Li_2MnO_3 . The performance of the solid soln. as the **cathode** of the Li cell was comparable with that of LiCoO_2 , although the discharge capacity decreased with the increase of x. The cyclic voltammetry of the Mn-substituted samples showed two anodic peaks at 3.9 and 4.4 V.
- IT **184909-56-6P**, Cobalt lithium manganese oxide ($\text{Co}_{0.1}\text{Li}_{1-1.33}\text{Mn}_{0-0.67}\text{O}_2$) (prepn., charge-discharge curves and cyclic voltammetry of)
- RN 184909-56-6 ZCA
- CN Cobalt lithium manganese oxide ($\text{Co}_{0.1}\text{Li}_{1-1.33}\text{Mn}_{0-0.67}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2

Co	0 - 1	7440-48-4
Mn	0 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2

CC 78-2 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 72

IT **184909-56-6P**, Cobalt lithium manganese oxide

(Co_{0.1}Li_{1-1.33}Mn_{0-0.67}O₂)

(prepn., charge-discharge curves and cyclic voltammetry of)

L34 ANSWER 16 OF 22 ZCA COPYRIGHT 2003 ACS on STN

130:239957 Secondary lithium **battery** having coated mixed oxide particles as **cathode** active mass. Sunagawa, Takuya; Ohshita, Ryuji; Watanabe, Hiroshi; Noma, Toshiyuki; Nishio, Koji (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11067209 A2 19990309 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-247779 19970827.

AB In the **battery**, the **cathode** active mass comprises base particles having a compn. Li_aCo_bMn_cM₁dNi_{1-(b+c+d)}O₂ (M₁ = B, Al, Si, Fe, V, Cr, Cu, Zn, Ga, and/or W; 0 < a < 1.2; 0.1 ≤ b < 0.5; 0.05 ≤ c < 0.4; 0 ≤ d < 0.4; 0.15 ≤ b + c + d < 0.7) coated with a mixed oxide having a compn. Li_eCo_fM₂fO₂ (M₂ = Mn, B, Al, Si, Fe, V, Cr, Cu, Zn, Ga, and/or W; 0 < e < 1.2; 0 ≤ f < 0.5). Since the base particles have high structural stability and the coating layer improves storage stability of the particles in charging state., the **battery** shows good cycling performance and high storage stability in charging state.

IT **134398-47-3P**, Cobalt lithium manganese oxide

(Co_{0.9}LiMn_{0.102})

(Li **battery** having coated mixed oxide particles as **cathode** active mass for storage stability in charging state)

RN 134398-47-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.102}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

IC ICM H01M004-58

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery cathode** coated mixed oxide;

storage stability lithium **battery cathode**;

cobalt lithium oxide coating **cathode battery**

IT **Battery cathodes**

(Li **battery** having coated mixed oxide particles as **cathode** active mass for storage stability in charging state).

IT 12190-79-3P, Cobalt lithium oxide (CoLiO_2) 118557-79-2P, Cobalt iron lithium oxide ($\text{Co}_{0.9}\text{Fe}_{0.1}\text{LiO}_2$) 134398-46-2P, Cobalt lithium tungsten oxide ($\text{Co}_{0.9}\text{LiW}_{0.1}\text{O}_2$) **134398-47-3P**, Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) 147521-48-0P, Cobalt lithium vanadium oxide ($\text{Co}_{0.9}\text{LiV}_{0.1}\text{O}_2$) 150030-49-2P, Cobalt copper lithium oxide ($\text{Co}_{0.9}\text{Cu}_{0.1}\text{LiO}_2$) 154471-92-8P, Cobalt lithium borate oxide ($\text{Co}_{0.9}\text{Li}(\text{BO}_3)_{0.1}\text{O}_{1.7}$) 163219-55-4P, Cobalt lithium oxide silicate ($\text{Co}_{0.9}\text{LiO}_{1.6}(\text{SiO}_4)_{0.1}$) 199923-74-5P, Aluminum cobalt lithium oxide ($\text{Al}_{0.1}\text{Co}_{0.9}\text{LiO}_2$) 221332-84-9P, Cobalt gallium lithium oxide ($\text{Co}_{0.9}\text{Ga}_{0.1}\text{LiO}_2$) 221332-94-1P, Chromium cobalt lithium oxide ($\text{Cr}_{0.1}\text{Co}_{0.9}\text{LiO}_2$) 221333-00-2P, Cobalt lithium zinc oxide ($\text{Co}_{0.9}\text{LiZn}_{0.1}\text{O}_2$)

(Li **battery** having coated mixed oxide particles as **cathode** active mass for storage stability in charging state)

IT 193214-71-0P, Aluminum cobalt lithium manganese nickel oxide, ($\text{Al}_{0.1}\text{Co}_{0.2}\text{LiMn}_{0.1}\text{Ni}_{0.6}\text{O}_2$)

(Li **battery** having coated mixed oxide particles as **cathode** active mass for storage stability in charging state)

L34 ANSWER 17 OF 22 ZCA COPYRIGHT 2003 ACS on STN

127:222885 Synthesis of solid solutions in a system of LiCoO_2 - Li_2MnO_3 for **cathode** materials of secondary lithium **batteries**. Numata, Koichi; Sakaki, Chie; Yamanaka, Shoji (Battery Materials Research Laboratory, Mitsui Mining and Smelting Co., Ltd., Takehara, 725, Japan). Chemistry Letters (8), 725-726 (English) 1997. CODEN: CMLTAG. ISSN: 0366-7022. Publisher: Chemical Society of Japan.

AB Lithium-manganese-cobalt oxide, $\text{Li}(\text{Li}_x/3\text{Mn}_{2x/3}\text{Co}_{1-x})\text{O}_2$ (0 .ltoreq. x .ltoreq. 1) was prepd. as a solid soln. between the two kinds of layer structured end members, LiCoO_2 and Li_2MnO_3 . Excess lithium carbonate or lithium hydroxide should be added to the mixt. on calcination at 900-1000.degree. to obtain the solid solns. The resulting layer structured solid solns. can be used as a **cathode** material for secondary lithium **batteries**.

IT **194983-19-2P**, Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{Li}_{1.03}\text{Mn}_{0.07}\text{O}_2$) **194983-20-5P**, Cobalt lithium manganese oxide ($\text{Co}_{0.89}\text{Li}_{1.03}\text{Mn}_{0.07}\text{O}_2$) **194983-21-6P**, Cobalt lithium manganese oxide ($\text{Co}_{0.69}\text{Li}_{1.1}\text{Mn}_{0.21}\text{O}_2$) **194983-22-7P**, Cobalt lithium manganese oxide ($\text{Co}_{0.48}\text{Li}_{1.17}\text{Mn}_{0.35}\text{O}_2$) **194983-23-8P**, Cobalt lithium manganese oxide ($\text{Co}_{0.29}\text{Li}_{1.24}\text{Mn}_{0.47}\text{O}_2$) **194983-24-9P**, Cobalt lithium manganese oxide ($\text{Co}_{0.1}\text{Li}_{1.33}\text{Mn}_{0.60}\text{O}_2$) (synthesis of solid solns. in a system of LiCoO_2 - Li_2MnO_3 for **cathode** materials of secondary lithium **batteries**)

RN 194983-19-2 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{Li}_{1.03}\text{Mn}_{0.07}\text{O}_2$) (9CI) (CA

INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.07	7439-96-5
Li	1.03	7439-93-2

RN 194983-20-5 ZCA

CN Cobalt lithium manganese oxide (Co_{0.89}Li_{1.03}Mn_{0.07}O₂) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.89	7440-48-4
Mn	0.07	7439-96-5
Li	1.03	7439-93-2

RN 194983-21-6 ZCA

CN Cobalt lithium manganese oxide (Co_{0.69}Li_{1.1}Mn_{0.21}O₂) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.69	7440-48-4
Mn	0.21	7439-96-5
Li	1.1	7439-93-2

RN 194983-22-7 ZCA

CN Cobalt lithium manganese oxide (Co_{0.48}Li_{1.17}Mn_{0.35}O₂) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.48	7440-48-4
Mn	0.35	7439-96-5
Li	1.17	7439-93-2

RN 194983-23-8 ZCA

CN Cobalt lithium manganese oxide (Co_{0.29}Li_{1.24}Mn_{0.47}O₂) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
-----------	-------	------------------------------

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.29	7440-48-4
Mn	0.47	7439-96-5
Li	1.24	7439-93-2

RN 194983-24-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}Li_{1.33}Mn_{0.60}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.6	7439-96-5
Li	1.33	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery cathode** lithium cobalt manganese oxide

IT Secondary **batteries**

(lithium; synthesis of solid solns. in a system of LiCoO₂-Li₂MnO₃ for **cathode** materials of secondary lithium **batteries**)

IT **Battery cathodes**

(synthesis of solid solns. in a system of LiCoO₂-Li₂MnO₃ for **cathode** materials of secondary lithium **batteries**)

IT 12190-79-3P, Cobalt lithium oxide CoLiO₂ **194983-19-2P**, Cobalt lithium manganese oxide (Co_{0.9}Li_{1.03}Mn_{0.07}O₂) **194983-20-5P**, Cobalt lithium manganese oxide (Co_{0.89}Li_{1.03}Mn_{0.07}O₂) **194983-21-6P**, Cobalt lithium manganese oxide (Co_{0.69}Li_{1.1}Mn_{0.21}O₂) **194983-22-7P**, Cobalt lithium manganese oxide (Co_{0.48}Li_{1.17}Mn_{0.35}O₂) **194983-23-8P**, Cobalt lithium manganese oxide (Co_{0.29}Li_{1.24}Mn_{0.47}O₂) **194983-24-9P**, Cobalt lithium manganese oxide (Co_{0.1}Li_{1.33}Mn_{0.60}O₂)

(synthesis of solid solns. in a system of LiCoO₂-Li₂MnO₃ for **cathode** materials of secondary lithium **batteries**)

L34 ANSWER 18 OF 22 ZCA COPYRIGHT 2003 ACS on STN

126:49198 Lithium intercalating **cathode** materials, their manufacture, and their use in secondary lithium **batteries**. Numata, Koichi; Sakaki, Che; Yamanaka, Shoji (Mitsui Mining & Smelting Co, Japan). Jpn. Kokai Tokkyo Koho JP 08273665 A2 19961018 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-93201 19950328.

AB The **cathode** materials are Li(Li_xMn_{2x}Co_{1-3x})O₂

(0 < x < 1/3) are obtained by substituting Co³⁺ in layered LiCoO₂ with Mn⁴⁺ and Li⁺. The **cathode** materials are manufd. by adding excess Li salt to a mixt. having a comps. corresponding to

Li(LixMn2xCo1-3x)O2 and firing. The **batteries** using these **cathode** materials have improved charge-discharge performance, and the consumption of Co for the manuf. is decreased.

IT **184909-55-5P**, Cobalt lithium manganese oxide (Co0.5Li1.17Mn0.33O2) **184909-56-6P**, Cobalt lithium manganese oxide (Co0-1Li1-1.33Mn0-0.67O2) (comps. of and excess lithium salt in manuf. of lithium cobalt manganese oxide **cathode** materials for **batteries**)

RN 184909-55-5 ZCA

CN Cobalt lithium manganese oxide (Co0.5Li1.17Mn0.33O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.33	7439-96-5
Li	1.17	7439-93-2

RN 184909-56-6 ZCA

CN Cobalt lithium manganese oxide (Co0-1Li1-1.33Mn0-0.67O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 0.67	7439-96-5
Li	1 - 1.33	7439-93-2

IC ICM H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium manganese cobalt oxide **cathode battery**

IT **Battery cathodes**

(comps. of and excess lithium salt in manuf. of lithium cobalt manganese oxide **cathode** materials for **batteries**)

IT **184909-55-5P**, Cobalt lithium manganese oxide (Co0.5Li1.17Mn0.33O2) **184909-56-6P**, Cobalt lithium manganese oxide (Co0-1Li1-1.33Mn0-0.67O2) (comps. of and excess lithium salt in manuf. of lithium cobalt manganese oxide **cathode** materials for **batteries**)

IT 554-13-2, Lithium carbonate

(excess lithium salt in manuf. of lithium cobalt manganese oxide **cathode** materials for **batteries**)

L34 ANSWER 19 OF 22 ZCA COPYRIGHT 2003 ACS on STN

124:348206 Ternary lithium mixed oxides for **cathodes** of secondary lithium **batteries**. Hemmer, Reinhard P.; Oesten, Ruediger; wohlfahrt-Mehrens, Margret; Arnold, Gisela (Zentrum Fuer Sonnenergie-und Wasserstoff-Forschung Baden-Wuerttemberg, Germany). Ger. Offen. DE 4447578 A1 19960404, 6 pp., Division of Ger. Offen. 4,435,117. (German). CODEN: GWXXBX. APPLICATION: DE 1994-4447578 19940930.

AB The oxides are $\text{LiMqCo}_1\text{-qO}_2$, where M is a cation of Group IIA-IVA, IIB-VIIB and VIII element; $0 < p \leq 1.2$; and $0 < q \leq 1$ or $0 < q \leq 0.5$. M is Fe, Ti, Al, or Ni. The oxides are prepd. by reacting hydroxides and/or H₂O-sol. metal salts in **aq.** **alk.** medium to form a homogeneous suspension, and the obtained suspension is dried and heated to 500-900.degree. at 1-20.degree./min.

IT **118819-39-9P**, Cobalt lithium manganese oxide ($\text{Co}_{0.8}\text{LiMn}_{0.2}\text{O}_2$) (for **cathodes** of secondary lithium **batteries**)

RN 118819-39-9 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.8}\text{LiMn}_{0.2}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4
Mn	0.2	7439-96-5
Li	1	7439-93-2

IC ICM C01G051-00
ICS H01M004-48

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49

ST lithium mixed oxide **battery cathode**; iron lithium oxide **battery cathode**; titanium lithium oxide **battery cathode**; aluminum lithium oxide **battery cathode**; nickel lithium oxide **battery cathode**

IT **Cathodes**
(**battery**, ternary lithium mixed oxides for lithium)

IT **118819-39-9P**, Cobalt lithium manganese oxide ($\text{Co}_{0.8}\text{LiMn}_{0.2}\text{O}_2$) (for **cathodes** of secondary lithium **batteries**)

IT 176710-69-3, Cobalt iron lithium oxide ($(\text{Co,Fe})\text{LiO}_{1.2}\text{O}_2$)
176710-70-6, Aluminum cobalt lithium oxide ($(\text{Al,Co})\text{LiO}_{1.2}\text{O}_2$)
176710-71-7, Cobalt lithium nickel oxide ($(\text{Co,Ni})\text{LiO}_{1.2}\text{O}_2$)
176744-47-1, Cobalt lithium titanium oxide ($(\text{Co,Ti})\text{LiO}_{1.2}\text{O}_2$)
(for **cathodes** of secondary lithium **batteries**)

L34 ANSWER 20 OF 22 ZCA COPYRIGHT 2003 ACS on STN

122:22379 Effect of Mn-substitution for Co on the crystal structure and acid delithiation of $\text{LiMnyCo}_1\text{-yO}_2$ solid solutions. Stoyanova, R.;

Zhecheva, E.; Zarkova, L. (Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Sofia, 1113, Bulg.). Solid State Ionics, 73(3,4), 233-40 (English) 1994. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier.

AB $\text{LiMnCo}_{1-y}\text{O}_2$ ($\text{Li}/(\text{Mn}+\text{Co}) \approx 1$ and $0 < y < 1$) were obtained by a solid state reaction between LiOH and Mn-Co spinels in air ($0 < y < 0.2$) or under N ($0.2 < y < 1$). The crystal structure of the ternary oxides depends on the Mn/(Mn+Co) ratio: up to $y < 0.2$, oxides with a trigonal structure (space group $R\bar{3}m$) are formed; at $0.2 < y < 0.7$, oxides with a rock-salt type structure (space group $Fm\bar{3}m$) appear; finally, at $y > 0.7$, the oxides obtained have a tetragonal spinel structure ($I4_1/amd$). Acid delithiation of the Li-Mn-Co oxides proceeds differently depending on their compn. and crystal structure. With Co-rich oxides, the acid extn. of Li proceeds within the initial trigonal structure, while with rock-salt and tetragonal oxides acid delithiation yields $\text{Li}_x(\text{MnCo}_{1-y})\text{O}_2$ oxides with a cubic spinel structure (space group $Fd\bar{3}m$). Among $\text{LiMnCo}_{1-y}\text{O}_2$, Li is removed more easily and to a higher extent from the tetragonal oxides. Due to the high oxidn. degree of the Mn and Co ions in delithiated samples, the **electrochem. cell** consisting of $\text{Li}/\text{Li}_x(\text{MnCo}_{1-y})\text{O}_2$ displays a high discharge voltage (4.1-4.2 V), which allows its direct discharge. The highest reversibility and capacity per formula unit (≈ 0.75 Li) are obsd. on Mn-rich spinel oxides with $y > 0.7$.

IT **159662-59-6P**, Cobalt lithium manganese oxide ($\text{Co}_{0.98}\text{Li}_{0.98}\text{Mn}_{0.04}\text{O}_2$) **159662-60-9P**, Cobalt lithium manganese oxide ($\text{Co}_{0.95}\text{Li}_{0.98}\text{Mn}_{0.07}\text{O}_2$) **159662-61-0P**, Cobalt lithium manganese oxide ($\text{Co}_{0.83}\text{Li}_{0.97}\text{Mn}_{0.20}\text{O}_2$) **159662-62-1P**, Cobalt lithium manganese oxide ($\text{Co}_{0.63}\text{Li}_{0.95}\text{Mn}_{0.42}\text{O}_2$) **159662-63-2P**, Cobalt lithium manganese oxide ($\text{Co}_{0.42}\text{Li}_{0.92}\text{Mn}_{0.66}\text{O}_2$) **159662-64-3P**, Cobalt lithium manganese oxide ($\text{Co}_{0.36}\text{Li}_{0.95}\text{Mn}_{0.69}\text{O}_2$) **159662-65-4P**, Cobalt lithium manganese oxide ($\text{Co}_{0.21}\text{Li}_{0.94}\text{Mn}_{0.85}\text{O}_2$) (prepn. and crystal structure and delithiation of)

RN 159662-59-6 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.98}\text{Li}_{0.98}\text{Mn}_{0.04}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.04	7439-96-5
Li	0.98	7439-93-2

RN 159662-60-9 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.95}\text{Li}_{0.98}\text{Mn}_{0.07}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.07	7439-96-5
Li	0.98	7439-93-2

RN 159662-61-0 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.83}Li_{0.97}Mn_{0.20}O₂) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.83	7440-48-4
Mn	0.2	7439-96-5
Li	0.97	7439-93-2

RN 159662-62-1 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.63}Li_{0.95}Mn_{0.42}O₂) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.63	7440-48-4
Mn	0.42	7439-96-5
Li	0.95	7439-93-2

RN 159662-63-2 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.42}Li_{0.92}Mn_{0.66}O₂) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.42	7440-48-4
Mn	0.66	7439-96-5
Li	0.92	7439-93-2

RN 159662-64-3 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.36}Li_{0.95}Mn_{0.69}O₂) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2

Co	0.36	7440-48-4
Mn	0.69	7439-96-5
Li	0.95	7439-93-2

RN 159662-65-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.21}Li_{0.94}Mn_{0.85}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.21	7440-48-4
Mn	0.85	7439-96-5
Li	0.94	7439-93-2

CC 78-2 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75, 76

IT **159662-59-6P**, Cobalt lithium manganese oxide (Co_{0.98}Li_{0.98}Mn_{0.04}O₂) **159662-60-9P**, Cobalt lithium manganese oxide (Co_{0.95}Li_{0.98}Mn_{0.07}O₂) **159662-61-0P**, Cobalt lithium manganese oxide (Co_{0.83}Li_{0.97}Mn_{0.20}O₂) **159662-62-1P**, Cobalt lithium manganese oxide (Co_{0.63}Li_{0.95}Mn_{0.42}O₂) **159662-63-2P**, Cobalt lithium manganese oxide (Co_{0.42}Li_{0.92}Mn_{0.66}O₂) **159662-64-3P**, Cobalt lithium manganese oxide (Co_{0.36}Li_{0.95}Mn_{0.69}O₂) **159662-65-4P**, Cobalt lithium manganese oxide (Co_{0.21}Li_{0.94}Mn_{0.85}O₂) (prepn. and crystal structure and delithiation of)

L34 ANSWER 21 OF 22 ZCA COPYRIGHT 2003 ACS on STN

118:42334 Secondary nonaqueous-electrolyte lithium **batteries**.

Mifuji, Yasuhiko; Murai, Sukeyuki; Ito, Shuji; Toyoguchi, Yoshinori (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04237968 A2 19920826 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-5039 19910121.

AB The **batteries** comprise **cathodes** contg.

Li_yCo_{1-x}M_xO₂ (M = Mn, Ni, Cr; x < 0.5; y = 0.85-1.15) active materials, Li salts-contg. electrolytes, and separators prepd. by soaking them in **alk. aq. solns.** and drying. Preferably, the separators are polyolefins. The **batteries** show low self discharging.

IT **134398-47-3**, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.102}) (**cathodes**, for lithium **batteries**)

RN 134398-47-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.102}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2

Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

IC ICM H01M010-40
ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium **battery** separator; polyolefin separator lithium **battery**; **cathode battery** lithium cobalt oxide

IT **Cathodes**
(**battery**, complex oxide)

IT **Batteries**, secondary
(separators, polyolefin, alkali-treated and dried)

IT 12190-79-3 101920-93-8, Cobalt lithium nickel oxide
(Co_{0.5}LiNi_{0.5}O₂) 113066-92-5, Cobalt lithium nickel oxide
(Co_{0.9}LiNi_{0.1}O₂) 118819-08-2; Cobalt lithium manganese oxide
(Co_{0.5}LiMn_{0.5}O₂) **134398-47-3**, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂) 145424-00-6, Chromium cobalt lithium oxide (Cr_{0.5}Co_{0.5}LiO₂)
(**cathodes**, for lithium **batteries**)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene
(separators, soaked in **aq. alkali** and dried, for lithium secondary **batteries**)

L34 ANSWER 22 OF 22 ZCA COPYRIGHT 2003 ACS on STN
110:79372 Manufacture of lithium manganese oxide solid solutions.
Matsumoto, Kazunobu; Nagai, Tatsu; Kajita, Kozo; Manabe, Toshikatsu; Asai, Takeshi; Kawai, Nanao (Hitachi Maxell, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63210028 A2 19880831 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-43550 19870225.

AB Mn oxide, M oxides, Li oxide, and/or their pyrolysis precursors are mixed and heated in an open **atm.** without controlling O concn., to give LiMn_{1-y}MyO₂ for Li **battery cathodes**, where M = 1st row transition metal other than Mn, and 0.1 < y < 1. Thus, an aq. 90:10 mol mixt. of Mn chloride and CoCl₂ was hydrolyzed to give a coppt., which was dried, mixed with equiv. molar amt. of Li₂CO₃, heated 3 h at 1200.degree. in **air**, and **air** quenched to give LiMn_{0.9}Co_{0.1}O₂.

IT **118819-08-2P**, Cobalt lithium manganese oxide
(Co_{0.5}LiMn_{0.5}O₂) **118819-39-9P**, Cobalt lithium manganese oxide (Co_{0.8}LiMn_{0.2}O₂) **118819-40-2P**, Cobalt lithium manganese oxide (Co_{0.7}LiMn_{0.3}O₂) **118819-41-3P**, Cobalt lithium manganese oxide (Co_{0.3}LiMn_{0.7}O₂) **118819-42-4P**, Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂)
(manuf. of, for **battery cathodes**)

RN 118819-08-2 ZCA
CN Cobalt lithium manganese oxide (Co_{0.5}LiMn_{0.5}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component
-----------	-------	-----------

		Registry Number
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

RN 118819-39-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.8}LiMn_{0.2}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.8	7440-48-4
Mn	0.2	7439-96-5
Li	1	7439-93-2

RN 118819-40-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.7}LiMn_{0.3}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.7	7440-48-4
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 118819-41-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.3}LiMn_{0.7}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.3	7440-48-4
Mn	0.7	7439-96-5
Li	1	7439-93-2

RN 118819-42-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4

Mn	0.9	7439-96-5
Li	1	7439-93-2

IC ICM C01G045-00
ICS C01G051-00
ICA H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST lithium manganese cobalt oxide; **battery cathode**
oxide soln; **cathode** lithium manganese cobalt oxide
IT **Cathodes**
(**battery**, lithium manganese transition metal oxides
for, manuf. of)
IT **118819-08-2P**, Cobalt lithium manganese oxide
(Co_{0.5}LiMn_{0.5}O₂) **118819-39-9P**, Cobalt lithium manganese
oxide (Co_{0.8}LiMn_{0.2}O₂) **118819-40-2P**, Cobalt lithium
manganese oxide (Co_{0.7}LiMn_{0.3}O₂) **118819-41-3P**, Cobalt
lithium manganese oxide (Co_{0.3}LiMn_{0.7}O₂) **118819-42-4P**,
Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂)
(manuf. of, for **battery cathodes**)

=> d 143 1-6 cbib abs hitstr hitind

L43 ANSWER 1 OF 6 ZCA COPYRIGHT 2003 ACS on STN
138:306625 Lithiated **O2** phase, Li(2/3)+x(Co_{0.15}Mn_{0.85})
O2 as **cathode** for Li-ion **batteries**.
Shaju, K. M.; Subba Rao, G. V.; Chowdari, B. V. R. (Institute of
Materials Research and Engineering, Singapore, 117602, Singapore).
Solid State Ionics, 152-153, 69-81 (English) 2002. CODEN: SSIOD3.
ISSN: 0167-2738. Publisher: Elsevier Science B.V..
AB Synthesis, characterization and **cathodic** behavior of
O2-phase layered manganese oxides, Li_{2/3}(Co_{0.15}Mn_{0.85})
O2 (**O2**(Li)) and Li(2/3)+x(Co_{0.15}Mn_{0.85})**O2**
(**O2**(Li+x)) have been reported. The precursor compd. for
the synthesis is Na_{2/3}(Co_{0.15}Mn_{0.85})**O2**. X-ray diffraction
(XRD), infra-red (IR), and X-ray photoelectron spectra (XPS) data
are consistent with that expected for both the compds. with regard
to the structure and valence state. The first-charge capacities of
O2(Li) and **O2**(Li+x) are 129 and 210 mA h/g, resp.,
at 0.1 C rate and 2.5-4.6 V (vs. Li). Reversible capacities of
140-150 mA h/g were obtained for both the above compds. and the
voltage vs. capacity profile shows an irreversible plateau at
4.3-4.6 V for the first charge, which is in accord with the cyclic
voltammograms. An irreversible capacity loss (ICL) of 62 mA h/g is
encountered in **O2**(Li+x) during the first charge and
discharge. Performance of the Li-ion **cell**, C/
electrolyte/O2(Li+x) has been evaluated and shows
that the ICL of the compd. is effectively utilized for the
irreversible consumption of lithium by the graphite anode in the
Li-ion cell, thereby demonstrating that the compd. **O2**
(Li+x) is a viable **cathode** material.

IT 249915-56-8, Cobalt lithium manganese oxide
 $\text{Co}_{0.15}\text{Li}_{0.67}\text{Mn}_{0.85}\text{O}_2$
 (battery cathodes; lithiated O2
 phase, $\text{Li}(2/3)+x(\text{Co}_{0.15}\text{Mn}_{0.85})\text{O}_2$ as cathode
 for Li-ion batteries)
 RN 249915-56-8 ZCA
 CN Cobalt lithium manganese oxide ($\text{Co}_{0.15}\text{Li}_{0.67}\text{Mn}_{0.85}\text{O}_2$) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.15	7440-48-4
Mn	0.85	7439-96-5
Li	0.67	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium cobalt manganese oxide battery anode
 IT Battery cathodes
 (lithiated O2 phase, $\text{Li}(2/3)+x(\text{Co}_{0.15}\text{Mn}_{0.85})\text{O}_2$
 as cathode for Li-ion batteries)
 IT Secondary batteries
 (lithium; lithiated O2 phase, $\text{Li}(2/3)+x(\text{Co}_{0.15}\text{Mn}_{0.85})\text{O}_2$
 as cathode for Li-ion batteries)
 IT 248581-93-3, Cobalt lithium manganese oxide ($\text{Co}_{0.3}\text{Li}_2\text{Mn}_{1.704}$)
 249915-56-8, Cobalt lithium manganese oxide
 $\text{Co}_{0.15}\text{Li}_{0.67}\text{Mn}_{0.85}\text{O}_2$
 (battery cathodes; lithiated O2
 phase, $\text{Li}(2/3)+x(\text{Co}_{0.15}\text{Mn}_{0.85})\text{O}_2$ as cathode
 for Li-ion batteries)
 IT 509107-06-6, Cobalt manganese sodium oxide ($\text{Co}_{0.15}\text{Mn}_{0.85}\text{Na}_{0.67}\text{O}_2$)
 (precursor; lithiated O2 phase, $\text{Li}(2/3)+x(\text{Co}_{0.15}\text{Mn}_{0.85})\text{O}_2$
 as cathode for Li-ion batteries)

L43 ANSWER 2 OF 6 ZCA COPYRIGHT 2003 ACS on STN
 137:386978 T2 and O2 $\text{Li}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x/2}\text{Mn}_{2/3-x/2}]\text{O}_2$
 Electrode Materials. Lu, Zhonghua; Donaberger, R. A.; Thomas, C.
 L.; Dahn, J. R. (Department of Physics, Dalhousie University,
 Halifax, NS, B3H 3J5, Can.). Journal of the Electrochemical
 Society, 149(8), A1083-A1091 (English) 2002. CODEN: JESQAN. ISSN:
 0013-4651. Publisher: Electrochemical Society.
 AB The structure and the electrochem. properties of
 $\text{P2-Na}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x/2}\text{Mn}_{2/3-x/2}]\text{O}_2$ and $\text{Li}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x/2}\text{Mn}_{2/3-x/2}]\text{O}_2$ (0 ≤ x ≤ 2/3) are studied by
 x-ray and neutron diffraction as well as by electrochem. techniques.
 $\text{Li}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x/2}\text{Mn}_{2/3-x/2}]\text{O}_2$ (0 ≤ x ≤ 2/3)
 can be considered a solid soln. between $\text{Li}_{2/3}\text{Li}^+[\text{Ni}_{1/3}\text{Mn}_{2/3}]\text{O}_2$
 and $\text{Li}_{2/3}\text{Li}^+[\text{Co}_{2/3}\text{Mn}_{1/3}]\text{O}_2$. Samples with x near 0 and with x
 near 2/3 adopt the T2 structure, while those with intermediate x
 show a stacking faulted O2 structure. This paper
 demonstrates that T2- $\text{Li}_{2/3}[\text{Co}_{2/3}\text{Mn}_{1/3}]\text{O}_2$ is quite

different from $\text{T2-Li}_{2/3}[\text{Ni}_{1/3}\text{Mn}_{2/3}]\text{O}_2$ in its properties. N diffraction studies indicate that there is no superlattice ordering of Co and Mn in the transition metal layers of $\text{P2-Na}_{2/3}[\text{Co}_{2/3}\text{Mn}_{1/3}]\text{O}_2$ or $\text{T2-Li}_{2/3}[\text{Co}_{2/3}\text{Mn}_{1/3}]\text{O}_2$, as there is in $\text{P2-Na}_{2/3}[\text{Ni}_{1/3}\text{Mn}_{2/3}]\text{O}_2$ and $\text{T2-Li}_{2/3}[\text{Ni}_{1/3}\text{Mn}_{2/3}]\text{O}_2$. Electrochem. results show that all the Li can be extd. from $\text{T2-Li}_{2/3}[\text{Co}_{2/3}\text{Mn}_{1/3}]\text{O}_2$, unlike $\text{T2-Li}_{2/3}[\text{Ni}_{1/3}\text{Mn}_{2/3}]\text{O}_2$, from which only 1/2 the available Li can be extd.

IT 476301-62-9, Cobalt lithium manganese oxide
($\text{Co}_{0.67}\text{Li}_{0.67}\text{Mn}_{0.33}\text{O}_2$)
(structure and electrochem. properties of T2 and O_2
 $\text{Li}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x}/2\text{Mn}_{2/3-x/2}]\text{O}_2$ electrode materials)
RN 476301-62-9 ZCA
CN Cobalt lithium manganese oxide ($\text{Co}_{0.67}\text{Li}_{0.67}\text{Mn}_{0.33}\text{O}_2$) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.67	7440-48-4
Mn	0.33	7439-96-5
Li	0.67	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75

ST **battery cathode** layered cobalt lithium manganese
nickel oxide; sodium cobalt manganese nickel oxide structure
cathode precursor

IT **Battery cathodes**
(structure and electrochem. properties of T2 and O_2
 $\text{Li}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x}/2\text{Mn}_{2/3-x/2}]\text{O}_2$ electrode materials)
IT 285978-95-2, Manganese nickel sodium oxide ($\text{Mn}_{0.67}\text{Ni}_{0.33}\text{Na}_{0.67}\text{O}_2$)
476301-46-9, Cobalt manganese nickel sodium oxide
($\text{Co}_{0.08}\text{Mn}_{0.63}\text{Ni}_{0.29}\text{Na}_{0.67}\text{O}_2$) 476301-47-0, Cobalt manganese nickel
sodium oxide ($\text{Co}_{0.12}\text{Mn}_{0.6}\text{Ni}_{0.27}\text{Na}_{0.67}\text{O}_2$) 476301-48-1, Cobalt
manganese nickel sodium oxide ($\text{Co}_{0.17}\text{Mn}_{0.58}\text{Ni}_{0.25}\text{Na}_{0.67}\text{O}_2$)
476301-49-2, Cobalt manganese nickel sodium oxide
($\text{Co}_{0.25}\text{Mn}_{0.54}\text{Ni}_{0.21}\text{Na}_{0.67}\text{O}_2$) 476301-50-5, Cobalt manganese nickel
sodium oxide ($\text{Co}_{0.33}\text{Mn}_{0.5}\text{Ni}_{0.17}\text{Na}_{0.67}\text{O}_2$) 476301-51-6, Cobalt
manganese nickel sodium oxide ($\text{Co}_{0.42}\text{Mn}_{0.46}\text{Ni}_{0.12}\text{Na}_{0.67}\text{O}_2$)
476301-52-7, Cobalt manganese nickel sodium oxide
($\text{Co}_{0.5}\text{Mn}_{0.42}\text{Ni}_{0.08}\text{Na}_{0.67}\text{O}_2$) 476301-53-8, Cobalt manganese nickel
sodium oxide ($\text{Co}_{0.58}\text{Mn}_{0.38}\text{Ni}_{0.04}\text{Na}_{0.67}\text{O}_2$) 476301-54-9, Cobalt
manganese sodium oxide ($\text{Co}_{0.67}\text{Mn}_{0.33}\text{Na}_{0.67}\text{O}_2$)
(structure and electrochem. properties of P2 $\text{Na}_{2/3}[\text{Co}_x\text{Ni}_{1/3-x}/2\text{Mn}_{2/3-x/2}]\text{O}_2$ used as precursor for electrode
materials)

IT 259190-87-9, Lithium manganese nickel oxide ($\text{Li}_{0.67}\text{Mn}_{0.67}\text{Ni}_{0.33}\text{O}_2$)
285979-02-4, Cobalt lithium manganese nickel oxide
($\text{Co}_{0.17}\text{Li}_{0.67}\text{Mn}_{0.58}\text{Ni}_{0.25}\text{O}_2$) 476301-55-0, Cobalt lithium manganese

nickel oxide (Co_{0.08}Li_{0.67}Mn_{0.63}Ni_{0.29}O₂) 476301-56-1, Cobalt lithium manganese nickel oxide (Co_{0.12}Li_{0.67}Mn_{0.6}Ni_{0.27}O₂) 476301-57-2, Cobalt lithium manganese nickel oxide (Co_{0.25}Li_{0.67}Mn_{0.54}Ni_{0.21}O₂) 476301-58-3, Cobalt lithium manganese nickel oxide (Co_{0.33}Li_{0.67}Mn_{0.5}Ni_{0.17}O₂) 476301-59-4, Cobalt lithium manganese nickel oxide (Co_{0.42}Li_{0.67}Mn_{0.46}Ni_{0.12}O₂) 476301-60-7, Cobalt lithium manganese nickel oxide (Co_{0.5}Li_{0.67}Mn_{0.42}Ni_{0.08}O₂) 476301-61-8, Cobalt lithium manganese nickel oxide (Co_{0.58}Li_{0.67}Mn_{0.38}Ni_{0.04}O₂) **476301-62-9**, Cobalt lithium manganese oxide (Co_{0.67}Li_{0.67}Mn_{0.33}O₂) (structure and electrochem. properties of T₂ and O₂ Li_{2/3}[Co_xNi_{1/3-x}/2Mn_{2/3-x/2}]O₂ electrode materials)

L43 ANSWER 3 OF 6 ZCA COPYRIGHT 2003 ACS on STN

132:24810 Structural transformation on cycling layered Li(Mn_{1-y}Co_y)

O₂ cathode materials. Armstrong, A. R.; Robertson, A. D.; Bruce, P. G. (School of Chemistry, University of St. Andrews, St. Andrews, KY16 9ST, UK). *Electrochimica Acta*, 45(1-2), 285-294 (English) 1999. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB Layered Li_x(Mn_{1-y}Co_y)**O₂** can deliver a discharge capacity on cycling of 200 mA h g⁻¹ at 0.1 mA/cm². Structural transformations occurring in these solid solns. during electrochem. cycling of lithium have been investigated by combining the results from powder neutron diffraction with those from cyclic voltammetry and incremental capacity measurements. The layered structure of the solid solns. converts to spinel on cycling. The rate of conversion depends on the cobalt content. There is evidence that conversion to spinel commences even within the first cycle of the solid soln. with y = 0.1 whereas compds. with the compn. y = 0.3 show almost no conversion to spinel within three cycles and only some conversion after 30 cycles. A two-phase model composed of layered and cubic spinels does not significantly improve the fit to the neutron data for the y = 0.1 compn. within the first cycle indicating that there is little evidence of long range order in any spinel that is formed. Clear diffraction evidence of an ordered spinel phase for y = 0.1 is obsd. after four cycles. Conversion to spinel does not appear to have a deleterious effect on the capacity retention on cycling.

IT **231620-68-1**, Cobalt lithium manganese oxide (Co_{0.1}Li_{0.81}Mn_{0.9}O₂) **252212-75-2**, Cobalt lithium manganese oxide (Co_{0.2}Li_{0.81}Mn_{0.8}O₂) **252212-76-3**, Cobalt lithium manganese oxide (Co_{0.1}Li_{0.7}Mn_{0.9}O₂) **252212-93-4**, Cobalt lithium manganese oxide (Co_{0.1}Li_{0.35}Mn_{0.9}O₂) (structural transformation on cycling layered Li(Mn_{1-y}Co_y) **O₂ cathode** materials)

RN 231620-68-1 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}Li_{0.81}Mn_{0.9}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	+	=====

O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	0.81	7439-93-2

RN 252212-75-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.2}Li_{0.81}Mn_{0.80}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	2	17778-80-2
Co	0.2	7440-48-4
Mn	0.8	7439-96-5
Li	0.81	7439-93-2

RN 252212-76-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}Li_{0.7}Mn_{0.90}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	0.7	7439-93-2

RN 252212-93-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}Li_{0.35}Mn_{0.90}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	0.35	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72ST transformation structural **cathode** lithium **battery**
cycling; lithium manganese cobalt oxide **cathode** cyclingIT Secondary **batteries**
(lithium; structural transformation on cycling layered
Li(Mn_{1-y}Co_y)O₂ **cathode** materials)IT **Battery cathodes**
Crystal structure
Intercalation
Neutron diffraction

(structural transformation on cycling layered Li(Mn_{1-y}Co_y)
O₂ cathode materials)

IT 231620-68-1, Cobalt lithium manganese oxide
(Co_{0.1}Li_{0.81}Mn_{0.90}O₂) 252212-75-2, Cobalt lithium manganese
oxide (Co_{0.2}Li_{0.81}Mn_{0.80}O₂) 252212-76-3, Cobalt lithium
manganese oxide (Co_{0.1}Li_{0.7}Mn_{0.90}O₂) 252212-93-4, Cobalt
lithium manganese oxide (Co_{0.1}Li_{0.35}Mn_{0.90}O₂)
(structural transformation on cycling layered Li(Mn_{1-y}Co_y)
O₂ cathode materials)

L43 ANSWER 4 OF 6 ZCA COPYRIGHT 2003 ACS on STN

131:325075 Secondary **battery**. Vitins, Girts; West, Keld;
Koksbang, Rene (Danionics A/S, Den.). PCT Int. Appl. WO 9959214 A1
19991118, 30 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA,
BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD,
SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH,
CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR,
NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2.
APPLICATION: WO 1999-EP3246 19990507. PRIORITY: GB 1998-9964
19980508.

AB The invention relates to a rechargeable **electrochem.**
cell comprising an anode, an electrolyte and a
cathode in which the **cathode** structure comprises a
lithium cobalt manganese oxide of the compn. Li₂Co_yMn_{2-y}O₄ where 0 <
y < 0.6. The lithium cobalt manganese oxide of the above formula
can be the only active compd. or can be used together with one or
more other rechargeable compds. The lithium cobalt manganese oxide
of the above formula may be in **air** and moisture
insensitive tetragonal form and provides addnl. active lithium to
compensate for capacity losses in lithium ion cells and
lithium-alloy cells.

IT 118819-41-3, Cobalt lithium manganese oxide (Co_{0.3}LiMn_{0.70}O₂)
180742-84-1, Cobalt lithium manganese oxide
(Co_{0.05}LiMn_{0.95}O₂) 207990-15-6, Cobalt lithium manganese
oxide (Co_{0.2}LiMn_{0.80}O₂)
(secondary **battery cathode** contg. lithium
cobalt manganese oxide)

RN 118819-41-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.3}LiMn_{0.70}O₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.3	7440-48-4
Mn	0.7	7439-96-5
Li	1	7439-93-2

RN 180742-84-1 ZCA
 CN Cobalt lithium manganese oxide (Co0.05LiMn0.95O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	1	7439-93-2

RN 207990-15-6 ZCA
 CN Cobalt lithium manganese oxide (Co0.2LiMn0.8O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.2	7440-48-4
Mn	0.8	7439-96-5
Li	1	7439-93-2

IC ICM H01M004-50
 ICS H01M004-52
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **battery cathode** lithium cobalt manganese oxide
 IT Carbon black, uses
 Coke
 (anode; secondary **battery cathode** contg.
 lithium cobalt manganese oxide)
 IT Secondary **batteries**
 (lithium; secondary **battery cathode** contg.
 lithium cobalt manganese oxide)
 IT **Battery cathodes**
 (secondary **battery cathode** contg. lithium
 cobalt manganese oxide)
 IT 1332-29-2, Tin oxide 7429-90-5, Aluminum, uses 7440-21-3,
 Silicon, uses 7782-42-5, Graphite, uses
 (anode; secondary **battery cathode** contg.
 lithium cobalt manganese oxide)
 IT 96-48-0 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-29-2, .gamma.-Valerolactone 108-32-7, Propylene carbonate
 616-38-6, Dimethyl carbonate 7791-03-9, Lithium perchlorate
 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium
 manganese oxide limn2o4 12190-79-3, Cobalt lithium oxide colio2
 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium
 hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate **118819-41-3**, Cobalt lithium
 manganese oxide (Co0.3LiMn0.7O2) 131344-56-4, Cobalt lithium
 nickel oxide **180742-84-1**, Cobalt lithium manganese oxide

(Co_{0.05}LiMn_{0.95}O₂) 207990-15-6, Cobalt lithium manganese oxide (Co_{0.2}LiMn_{0.8}O₂) 214536-41-1, Cobalt lithium manganese oxide 248581-93-3, Cobalt lithium manganese oxide (Co_{0.3}Li₂Mn_{1.7}O₄) 248581-94-4, Cobalt lithium manganese oxide (Co_{0.5}Li₂Mn_{1.5}O₄) (secondary **battery cathode** contg. lithium cobalt manganese oxide)

L43 ANSWER 5 OF 6 ZCA COPYRIGHT 2003 ACS on STN

131:159687 The Layered Intercalation Compounds Li(Mn_{1-y}Co_y)O₂:

Positive Electrode Materials for Lithium-Ion **Batteries**.

Armstrong, A. Robert; Robertson, Alastair D.; Gitzendanner, Robert; Bruce, Peter G. (School of Chemistry, University of St. Andrews, St. Andrews, Fife, KY16 9ST, UK). Journal of Solid State Chemistry, 145(2), 549-556. (English) 1999. CODEN: JSSCBI. ISSN: 0022-4596. Publisher: Academic Press.

AB The layered intercalation compds. Li(Mn_{1-y}Co_y)O₂;

0.1 to eq. y. 0.5 cannot be prepd. by conventional solid state reaction but have been synthesized using a soln.-based route coupled with ion exchange. A continuous range of solid solns. with rhombohedral symmetry exists for 0.1 to eq. y. 0.5.

Consideration of transition metal to oxygen bond lengths indicates that Mn³⁺ is replaced by cobalt in the trivalent state. Localized high spin Mn³⁺ (3d⁴) induces a cooperative Jahn-Teller distortion in layered LiMnO₂, lowering the symmetry from rhombohedral R_{3m} to monoclinic (C_{2/m}). Substitution of as little as 10% Mn by Co is sufficient to suppress the distortion in Li_{0.9}(Mn_{0.9}Co_{0.1})O₂

, whereas half the Li must be extd. from LiMnO₂ to achieve a single undistorted rhombohedral phase. On removing and reinserting Li in LiMnO₂ only half the quantity of Li (equiv. to a specific charge of 130 mAhg⁻¹) may be reinserted on the first cycle; this substantial drop in capacity is eliminated with only 10% Co substitution. The latter material can sustain a large capacity on cycling (200 mAhg⁻¹). Higher Co contents have somewhat lower capacities but fade less at higher cycle nos. The marked improvement in capacity retention of the Co-doped materials compared with pure LiMnO₂ may be related in part to the absence of the Jahn-Teller distortion.

Electrochem. data indicate conversion to a spinel-like structure on cycling. Such conversion is progressively slower with increasing Co content. Cycling of this spinel-like material is significantly better than Co-doped spinel of the same compn. These materials are of interest as electrodes in rechargeable lithium **batteries**

. (c) 1999 Academic Press.

IT 207990-15-6, Cobalt lithium manganese oxide Co_{0.2}LiMn_{0.8}O₂

236750-94-0, Cobalt lithium manganese oxide (Co_{0.1}Li_{0.9}Mn_{0.9}O₂)

(layered intercalation compds. as **cathode** materials for lithium-ion **batteries**)

RN 207990-15-6 ZCA

CN Cobalt lithium manganese oxide (Co_{0.2}LiMn_{0.8}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.2	7440-48-4
Mn	0.8	7439-96-5
Li	1	7439-93-2

RN 236750-94-0 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}Li_{0.9}Mn_{0.9}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	0.9	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST **battery cathode** lithium manganese cobalt oxide

IT **Battery cathodes**

Jahn-Teller effect

(layered intercalation compds. as **cathode** materials for lithium-ion **batteries**)

IT Secondary **batteries**

(lithium; layered intercalation compds. as **cathode** materials for lithium-ion **batteries**)

IT 207990-15-6, Cobalt lithium manganese oxide $\text{Co}_{0.2}\text{Li}_{0.8}\text{Mn}_{0.8}\text{O}_2$

236750-94-0, Cobalt lithium manganese oxide

($\text{Co}_{0.1}\text{Li}_{0.9}\text{Mn}_{0.9}\text{O}_2$)

(layered intercalation compds. as **cathode** materials for lithium-ion **batteries**)

IT 214536-41-1, Cobalt lithium manganese oxide

(layered intercalation compds. as **cathode** materials for lithium-ion **batteries**)

L43 ANSWER 6 OF 6 ZCA COPYRIGHT 2003 ACS on STN

129:191464 The intercalation compound $\text{Li}(\text{Mn}_{0.9}\text{Co}_{0.1})\text{O}_2$ as a positive electrode for rechargeable lithium **batteries**.

Robert Armstrong, A.; Gitzendanner, Robert (School of Chemistry, University of St. Andrews, Fife, KY16 9ST, UK). Chemical Communications (Cambridge) (17), 1833-1834 (English) 1998. CODEN: CHCOFS. ISSN: 1359-7345. Publisher: Royal Society of Chemistry.

AB By replacing only 10% of the Mn by Co in the layered lithium intercalation compd. LiMnO_2 , the amt. of lithium that can be removed and reinserted is increased by 50% corresponding to an increase in the ability to store charge from 130 to 200 mA-h/g at 100 $\mu\text{A}/\text{cm}^2$ and rendering this low cost/toxicity material of potential interest as a **cathode** in rechargeable lithium **batteries**.

Furthermore, the cooperative Jahn-Teller distortion due to localized

high spin $Mn^{3+}(3d^4)$ in $LiMnO_2$ appears to be suppressed for $Lix(Mn_{0.9}Co_{0.1})O_2$; $x < 0.9$ (80% Mn^{3+} assuming Co^{3+}).

IT **118819-42-4**, Cobalt lithium manganese oxide ($Co_{0.1}LiMn_{0.9}O_2$)
(intercalation compd. $Li(Mn_{0.9}Co_{0.1})O_2$ as
cathode for rechargeable lithium **batteries**)

RN 118819-42-4 ZCA

CN Cobalt lithium manganese oxide ($Co_{0.1}LiMn_{0.9}O_2$) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	1	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST cobalt lithium manganese oxide **cathode battery**

IT **Battery cathodes**

(intercalation compd. $Li(Mn_{0.9}Co_{0.1})O_2$ as
cathode for rechargeable lithium **batteries**)

IT **118819-42-4**, Cobalt lithium manganese oxide ($Co_{0.1}LiMn_{0.9}O_2$)
(intercalation compd. $Li(Mn_{0.9}Co_{0.1})O_2$ as
cathode for rechargeable lithium **batteries**)

=> d 136 1-36 cbib abs hitstr hitrn

L36 ANSWER 1 OF 36 ZCA COPYRIGHT 2003 ACS on STN

138:388235 Method for fabrication of nonaqueous electrolyte secondary
battery. Miyazaki, Shinya; Nishida, Nobumichi (Sanyo
Electric Co., Ltd., Japan). Eur. Pat. Appl. EP 1317008 A2 20030604,
9 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR,
IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR,
BG, CZ, EE, SK. (English). CODEN: EPXXDW. APPLICATION: EP
2002-26491 20021128. PRIORITY: JP 2001-367978 20011130.

AB The present invention provides a nonaq. **electrolyte**
secondary cell having a pos. electrode comprising
a pos. electrode active material, a **neg. electrode**
, and a nonaq. electrolyte. The pos. electrode active material is a
lithium-contg. transition metal composite oxide of a hexagonal
crystal system that includes a compd. represented by the general
formula $LiCo_{1-x}M_xO_2$, where M is at least one species selected from
the group consisting of V, Cr, Fe, Mn, Ni, Al, and Ti, and x is a
decimal no. in a range $0 < x < 1$, magnesium, and halogen. In a nonaq.
electrolyte secondary cell having such a
construction, the high-temp. characteristics are improved without
reducing the cell capacity.

IT **253875-65-9**, Cobalt lithium manganese oxide ($(Co,Mn)LiO_2$)
(method for fabrication of nonaq. electrolyte secondary
battery)

RN 253875-65-9 ZCA
 CN Cobalt lithium manganese oxide ((Co,Mn)LiO₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 1	7439-96-5
Li	1	7439-93-2

IT 253875-65-9, Cobalt lithium manganese oxide ((Co,Mn)LiO₂)
 (method for fabrication of nonaq. electrolyte secondary
battery)

L36 ANSWER 2 OF 36 ZCA COPYRIGHT 2003 ACS on STN
 138:324064 Cobalt-containing lithium manganese mixed oxide as
cathode material and its manufacture for secondary lithium
battery. Komaba, Shinichi; Kumagaya, Naoaki; Ming, Cheng
 Che (Tohoku Techno Arch Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho
 JP 2003123756 A2 20030425, 12 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 2001-318992 20011017.

AB The claimed **cathode** material is selected from an
 orthorhombic Co-contg. Li Mn mixed oxide LiMn_{1-x}Co_xO₂ (0 < x
 .ltoreq. 0.5) or its treated product to improve discharge capacity.
 The **cathode** material is manufd. by reacting a Co-contg.
 Mn₃O₄ (satisfying Mn valence .ltoreq.2.8) with a water-sol. Li
 compd. in a pressure container at 100-374.degree. and then drying.
 The process may comprise treating the **cathode** material to
 show a part of crystal structure from orthorhombic structure to
 spinel structure. The resulting **battery** has large
 capacity and long cycle life.

IT 118819-42-4P, Cobalt lithium manganese oxide
 (Co_{0.1}LiMn_{0.9}O₂) 512244-25-6P, Cobalt lithium manganese
 oxide (Co_{0-0.5}LiMn_{0.5-1.0}O₂)
 (orthorhombic cobalt-contg. lithium manganese mixed oxide manufd.
 by hydrothermal reaction for **cathode** in secondary
 lithium **battery**)

RN 118819-42-4 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	1	7439-93-2

RN 512244-25-6 ZCA
 CN Cobalt lithium manganese oxide (Co_{0-0.5}LiMn_{0.5-1.0}O₂) (9CI) (CA INDEX

NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 0.5	7440-48-4
Mn	0.5 - 1	7439-96-5
Li	1	7439-93-2

IT **118819-42-4P**, Cobalt lithium manganese oxide
 (Co_{0.1}LiMn_{0.9}O₂) **512244-25-6P**, Cobalt lithium manganese
 oxide (Co₀-0.5LiMn_{0.5}-102)
 (orthorhombic cobalt-contg. lithium manganese mixed oxide manufd.
 by hydrothermal reaction for **cathode** in secondary
 lithium **battery**)

L36 ANSWER 3 OF 36 ZCA COPYRIGHT 2003 ACS on STN

138:92695 Modified host lattices for Li intercalation with improved
 electrochemical properties. Pereira-Ramos, J. P.; Bach, S.;
 Franger, S.; Soudan, P.; Baffier, N. (Laboratoire d'Electrochimie,
 Catalyse et Synthese Organique, C.N.R.S., UMR 7582, Thiais, 94320,
 Fr.). NATO Science Series, II: Mathematics, Physics and Chemistry,
 61(New Trends in Intercalation Compounds for Energy Storage),
 269-288 (English) 2002. CODEN: NSSICD. Publisher: Kluwer Academic
 Publishers.

AB Transition metal oxides, such as vanadium and manganese oxides, are
 the most studied Li intercalation hosts for the **cathode**
 application of rechargeable **batteries**. The electrochem.
 performance of these oxides can be increased through a combination
 of low temp. techniques. Incorporation of metallic cations into the
 host structure and substitution reactions proved to be successful in
 strengthening the oxide structure and improving the capacity and the
 cycle life of the **cathode**.

IT **301543-05-5P**, Cobalt lithium manganese oxide
 Co_{0.15}Li_{0.45}Mn_{0.85}O₂
 (modified V₂O₅ and MnO₂ host lattices for Li intercalation with
 improved electrochem. properties for **battery**
cathodes)

RN 301543-05-5 ZCA

CN Cobalt lithium manganese oxide (Co_{0.15}Li_{0.45}Mn_{0.85}O₂) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.15	7440-48-4
Mn	0.85	7439-96-5
Li	0.45	7439-93-2

IT **301543-05-5P**, Cobalt lithium manganese oxide

Co_{0.15}Li_{0.45}Mn_{0.85}O₂

(modified V₂O₅ and MnO₂ host lattices for Li intercalation with improved electrochem. properties for **battery cathodes**)

L36 ANSWER 4 OF 36 ZCA COPYRIGHT 2003 ACS on STN

137:297369 **Cathode** active mass for secondary nonaqueous electrolyte **battery** and its manufacture. Katsurao, Ryuichi; Matsumoto, Kazunobu (Sumitomo Metal Mining Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002298843 A2 20021011, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-96066 20010329.

AB The **cathode** active mass is secondary particles of agglomerated primary LiMn_{1-y}MyO₂ ($0 < y \leq 0.10$, M = Cr, Ni, Co, and/or Al) particles having av. diam. $\leq 1 \mu\text{m}$. The active mass is prepd. by successively mixing spherical or spheroidal secondary particles of a Mn compd. with M compds., which may be melted, and a Li compd., without damaging the framework of the particles, and sintering. The M compd.-Mn compd. mixt. may be heated at 450-1000.degree. before mixing with Li compd.

IT **118819-42-4P**, Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) **180742-84-1P**, Cobalt lithium manganese oxide (Co_{0.05}LiMn_{0.95}O₂)

(comps. and manuf. of secondary particles of substituted lithium manganese oxides for secondary lithium **battery cathodes**)

RN 118819-42-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	1	7439-93-2

RN 180742-84-1 ZCA

CN Cobalt lithium manganese oxide (Co_{0.05}LiMn_{0.95}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	1	7439-93-2

IT **118819-42-4P**, Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) **180742-84-1P**, Cobalt lithium manganese oxide (Co_{0.05}LiMn_{0.95}O₂)

(compns. and manuf. of secondary particles of substituted lithium manganese oxides for secondary lithium **battery cathodes**)

L36 ANSWER 5 OF 36 ZCA COPYRIGHT 2003 ACS on STN

137:236218 Synthesis and electrochemical properties of $\text{Li}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$. Kajiyama, Akihisa; Takada, Kazunori; Inada, Taro; Kouguchi, Masaru; Kondo, Shigeo; Watanabe, Mamoru (Advanced Materials Laboratory, National Institute for Materials Science, Ibaraki, Tsukuba, 305-0044, Japan). Solid State Ionics, 149(1,2), 39-45 (English) 2002. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..

AB $\text{Na}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$, single phase, which is the starting material of layered $\text{Li}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$, was obtained by optimized synthesis conditions. The layered $\text{Li}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$ with α - NaFeO_2 structure obtained from $\text{Na}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$ by ion exchanging showed an electrode potential of 4.5 V vs. Li/Li^+ , higher than 4.0 V for those end members, LiCoO_2 and LiMnO_2 , and lower than 5.0 V of spinel-type LiCoMnO_4 . The specific capacity of the layered $\text{Li}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$ was increased with an increase in a Li^+ content of the products and showed a max. with a compn. of $\text{Li}_{0.8}\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$.

IT **380397-17-1P**, Cobalt lithium manganese oxide $\text{Co}_{0.5}\text{Li}_{0.6}\text{Mn}_{0.5}\text{O}_2$ **458569-27-2P**, Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{Li}_{0.8}\text{Mn}_{0.5}\text{O}_2$) **458569-28-3P**, Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{Li}_{0.7}\text{Mn}_{0.5}\text{O}_2$) (synthesis and electrochem. properties of $\text{Li}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$)

RN 380397-17-1 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{Li}_{0.6}\text{Mn}_{0.5}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	0.6	7439-93-2

RN 458569-27-2 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{Li}_{0.8}\text{Mn}_{0.5}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	0.8	7439-93-2

RN 458569-28-3 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{Li}_{0.7}\text{Mn}_{0.5}\text{O}_2$) (9CI) (CA INDEX NAME)

NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	0.7	7439-93-2

IT **380397-17-1P**, Cobalt lithium manganese oxide
 $\text{Co}_{0.5}\text{Li}_{0.6}\text{Mn}_{0.5}\text{O}_2$ **458569-27-2P**, Cobalt lithium manganese
oxide ($\text{Co}_{0.5}\text{Li}_{0.8}\text{Mn}_{0.5}\text{O}_2$) **458569-28-3P**, Cobalt lithium
manganese oxide ($\text{Co}_{0.5}\text{Li}_{0.7}\text{Mn}_{0.5}\text{O}_2$)
(synthesis and electrochem. properties of $\text{Li}_x\text{Co}_{0.5}\text{Mn}_{0.5}\text{O}_2$)

L36 ANSWER 6 OF 36 ZCA COPYRIGHT 2003 ACS on STN

137:113005 Sol-Gel Template Synthesis of Highly Ordered $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$
Nanowire Arrays and Their Structural Properties. Zhou, Yingke; Li,
Hulin (Chemistry Department of Lanzhou University, Lanzhou, 730000,
Peop. Rep. China). Journal of Solid State Chemistry, 165(2),
247-253 (English) 2002. CODEN: JSSCBI. ISSN: 0022-4596.
Publisher: Elsevier Science.

AB Highly ordered $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$ nanowire arrays were prepd. using
porous anodic aluminum oxide (AAO) template from sol-gel soln.
contg. $\text{Li}(\text{CH}_3\text{COO})$, $\text{Co}(\text{CH}_3\text{COO})_2$, and $\text{Mn}(\text{CH}_3\text{COO})_2$. Electron
microscopy showed that uniform length and diam. of $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$
nanowires were obtained, and the length and diam. of $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$
nanowires are dependent on the pore diam. and the thickness of the
applied AAO template. X-ray diffraction and electron diffraction
pattern investigations demonstrate that $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$ nanowires are
a layered structure of $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$ crystals. XPS anal. indicates
that the most closely resembling stoichiometric layered
 $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$ material has been obtained.

IT **118819-08-2P**, Cobalt lithium manganese oxide $\text{Co}_{0.5}\text{LiMn}_{0.5}\text{O}_2$
(nanowire arrays; sol-gel synthesis and properties of highly
ordered $\text{LiCo}_{0.5}\text{Mn}_{0.5}\text{O}_2$ nanowire arrays using porous anodic
alumina template)

RN 118819-08-2 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.5}\text{LiMn}_{0.5}\text{O}_2$) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

IT **118819-08-2P**, Cobalt lithium manganese oxide $\text{Co}_{0.5}\text{LiMn}_{0.5}\text{O}_2$
(nanowire arrays; sol-gel synthesis and properties of highly

ordered LiCo_{0.5}Mn_{0.5}O₂ nanowire arrays using porous anodic alumina template)

L36 ANSWER 7 OF 36 ZCA COPYRIGHT 2003 ACS on STN

137:96242 Lithium manganese mixed oxide **cathode** active mass and secondary nonaqueous-electrolyte **battery** using it. Yugamidani, Makoto; Ota, Satoshi; Yamato, Koji; Hayashi, Koji; Kitamura, Hajime; Miyashita, Takahiro (Chuo Denki Kogyo Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002198052 A2 20020712, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-397911 20001227.

AB The **cathode** active mass comprises a Li-Mn mixed oxide represented by Li_xMn_{1-y}MyO₂ (M is .gtoreq.1 of addnl. elements; x = 0.15-0.45; 0 < y .ltoreq. 0.30). The **battery** using the **cathode** active mass is also claimed. The **battery** has high discharge capacity and shows good cycling performance.

IT **441769-90-0P**, Cobalt lithium manganese oxide (Co_{0.05}Li_{0.28}Mn_{0.95}O₂) **441769-94-4P**, Cobalt lithium manganese oxide (Co_{0.03}Li_{0.31}Mn_{0.97}O₂) **441769-95-5P**, Cobalt lithium manganese oxide (Co_{0.09}Li_{0.28}Mn_{0.91}O₂) **441769-96-6P**, Cobalt lithium manganese oxide (Co_{0.19}Li_{0.3}Mn_{0.81}O₂) **441769-97-7P**, Cobalt lithium manganese oxide (Co_{0.27}Li_{0.28}Mn_{0.73}O₂) (Li-Mn mixed oxide **cathode** active mass for nonaq.-electrolyte **battery** for high discharge capacity and good cycling performance)

RN 441769-90-0 ZCA

CN Cobalt lithium manganese oxide (Co_{0.05}Li_{0.28}Mn_{0.95}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	0.28	7439-93-2

RN 441769-94-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.03}Li_{0.31}Mn_{0.97}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.03	7440-48-4
Mn	0.97	7439-96-5
Li	0.31	7439-93-2

RN 441769-95-5 ZCA

CN Cobalt lithium manganese oxide (Co_{0.09}Li_{0.28}Mn_{0.91}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.09	7440-48-4
Mn	0.91	7439-96-5
Li	0.28	7439-93-2

RN 441769-96-6 ZCA

CN Cobalt lithium manganese oxide (Co_{0.19}Li_{0.3}Mn_{0.81}O₂) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.19	7440-48-4
Mn	0.81	7439-96-5
Li	0.3	7439-93-2

RN 441769-97-7 ZCA

CN Cobalt lithium manganese oxide (Co_{0.27}Li_{0.28}Mn_{0.73}O₂) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.27	7440-48-4
Mn	0.73	7439-96-5
Li	0.28	7439-93-2

IT **441769-90-0P**, Cobalt lithium manganese oxide
(Co_{0.05}Li_{0.28}Mn_{0.95}O₂) **441769-94-4P**, Cobalt lithium
manganese oxide (Co_{0.03}Li_{0.31}Mn_{0.97}O₂) **441769-95-5P**,
Cobalt lithium manganese oxide (Co_{0.09}Li_{0.28}Mn_{0.91}O₂)
441769-96-6P, Cobalt lithium manganese oxide
(Co_{0.19}Li_{0.3}Mn_{0.81}O₂) **441769-97-7P**, Cobalt lithium
manganese oxide (Co_{0.27}Li_{0.28}Mn_{0.73}O₂)
(Li-Mn mixed oxide **cathode** active mass for
nonaq.-electrolyte **battery** for high discharge capacity
and good cycling performance)

L36 ANSWER 8 OF 36 ZCA COPYRIGHT 2003 ACS on STN

136:392338 The effect of a metal-oxide coating on the cycling behavior
at 55.degree.C in orthorhombic LiMnO₂ **cathode** materials.
Cho, Jaephil; Kim, Tae-Joon; Park, Byungwoo (Energy Development
Team, Samsung SDI Company, Limited, Chonan, S. Korea). Journal of
the Electrochemical Society, 149(3), A288-A292 (English) 2002.
CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical
Society.

AB The structural stability of metal-oxide-coated orthorhombic LiMnO_2 (o-LiMnO_2) was characterized by its 55.degree.C cycling behavior. Sol-gel coating of the metal oxides (Al_2O_3 and CoO), followed by heat-treatment at 400.degree.C, leads to the formation of the solid-soln. layer ($\text{LiMn}_{1-x}\text{M}_x\text{O}_2$) with a concn. gradient of metal atoms at the particle surface. The specific capacity and cycle life at 55.degree.C are influenced significantly by the metal-oxide coating. CoO -coated LiMnO_2 exhibits an addnl. voltage plateau at the deep discharge (2 V), and has a higher capacity than Al_2O_3 -coated electrode, although the capacity retention is inferior to the Al_2O_3 -coated **cathode**.

IT **253875-65-9**, Cobalt lithium manganese oxide ($(\text{Co,Mn})\text{LiO}_2$) (formation on surface of orthorhombic LiMnO_2 **cathode** materials coated with CoO during heating)

RN 253875-65-9 ZCA

CN Cobalt lithium manganese oxide ($(\text{Co,Mn})\text{LiO}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 1	7439-96-5
Li	1	7439-93-2

IT **253875-65-9**, Cobalt lithium manganese oxide ($(\text{Co,Mn})\text{LiO}_2$) (formation on surface of orthorhombic LiMnO_2 **cathode** materials coated with CoO during heating)

L36 ANSWER 9 OF 36 ZCA COPYRIGHT 2003 ACS on STN

136:234583 Preparation of lithium manganese oxides in molten alkali hydroxides and their electrochemical properties. Katayama, Keiichi; Higuchi, Masashi; Azuma, Yasuo; Yukawa, Megumi; Suhara, Manabu (Department of Industrial Chemistry, School of Engineering, Tokai University, Kanagawa, 259-1292, Japan). Key Engineering Materials, 214-215 (Asian Ceramic Science for Electronics I), 221-226 (English) 2002. CODEN: KEMAEY. ISSN: 1013-9826. Publisher: Trans Tech Publications Ltd..

AB Lithium manganese oxides, which are used as **cathode** materials in lithium rechargeable **batteries**, were prepd. by using molten alkali hydroxides, and the electrochem. properties of these oxide powders were evaluated. The compn. of alkali hydroxides and heating period altered the compn. and crystal structure of the powders, with the shorter period being the more favorable in this prepn. method. The **cathode** performance of the **batteries**, prepd. by using these powders, was evaluated as satisfactory. This method was also applied to the prepn. of doped lithium manganese oxide powders with a compn. of $\text{LiMn}_{0.9}\text{M}_{0.1}\text{O}_2$ (M: Co, Ni, Cr, Al, Ag, Fe), which also showed promising properties for use as **cathode** materials in rechargeable lithium **batteries**. This simple and quick method was promising for the prepn. of **cathode** powders.

IT **118819-42-4P**, Cobalt lithium manganese oxide
 (Co_{0.1}LiMn_{0.9}O₂)
 (prepn. of lithium manganese oxides in molten alkali hydroxides
 and their electrochem. properties)
 RN 118819-42-4 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	1	7439-93-2

IT **118819-42-4P**, Cobalt lithium manganese oxide
 (Co_{0.1}LiMn_{0.9}O₂)
 (prepn. of lithium manganese oxides in molten alkali hydroxides
 and their electrochem. properties)

L36 ANSWER 10 OF 36 ZCA COPYRIGHT 2003 ACS on STN
 136:72288 Lithium secondary **battery**. Nakura, Kensuke
 (Matsushita Electric Industrial Co., Ltd., Japan). Eur. Pat. Appl.
 EP 1168472 A1 20020102, 11 pp. DESIGNATED STATES: R: AT, BE, CH,
 DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV,
 FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-305602
 20010627. PRIORITY: JP 2000-198299 20000630; JP 2001-146741
 20010516.
 AB A lithium secondary **battery** having a higher energy d. and
 a longer cycle life than conventional **batteries** is
 disclosed, which comprises a pos. electrode capable of absorbing and
 desorbing lithium, a nonaq. electrolyte and a **neg.**
electrode capable of absorbing and desorbing lithium,
 wherein the **neg. electrode** comprises a nitride
 represented by the general formula: Li_xA_yMe_zN, where A is boron,
 silicon or aluminum, Me is at least one element selected from the
 group consisting of transition metal elements and metal elements of
 Group IIIB, IVB and VB, and x, y and z satisfy 0 < x < 3, 0 < y
 .ltoreq. 1, 0 < z .ltoreq. 1 and 0 < x + y + z .ltoreq. 3.

IT **383415-20-1**, Cobalt lithium manganese oxide
 (Co_{0-0.9}Li_{0-1.2}Mn_{0.1-1.0}O_{2-2.3})
 (lithium secondary **battery**)
 RN 383415-20-1 ZCA
 CN Cobalt lithium manganese oxide (Co_{0-0.9}Li_{0-1.2}Mn_{0.1-1.0}O_{2-2.3}) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2 - 2.3	17778-80-2
Co	0 - 0.9	7440-48-4

Mn	0.1 - 1	7439-96-5
Li	0 - 1.2	7439-93-2

IT **383415-20-1**, Cobalt lithium manganese oxide
(Co₀-0.9Li₀-1.2Mn_{0.1}-102-2.3)
(lithium secondary **battery**)

L36 ANSWER 11 OF 36 ZCA COPYRIGHT 2003 ACS on STN

136:56443 Electrodes and **batteries** formed from lithium metal oxide nanoparticles. Kumar, Sujeet; Horne, Craig R. (Nanogram Corporation, USA). PCT Int. Appl. WO 2001099215 A1 20011227, 102 pp. DESIGNATED STATES: W: CA, CN, JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US40979 20010614. PRIORITY: US 2000-595958 20000619.

AB Lithium metal oxide particles have been produced having av. diams. less than about 100 nm. Composite metal oxides of particular interest include, for example, lithium cobalt oxide, lithium nickel oxide, lithium titanium oxides and derivs. thereof. These nanoparticles composite metal oxides can be used as electroactive particles in lithium or lithium ion **batteries**.

Batteries of particular interest include lithium titanium oxide in the **neg. electrode** and lithium cobalt manganese oxide in the pos. electrode.

IT **118819-08-2P**, Cobalt lithium manganese oxide Co_{0.5}LiMn_{0.5}O₂
382151-88-4P, Cobalt lithium manganese oxide
(Co_{0.5}-1LiMn₀-0.5O₂)

(electrodes and **batteries** formed from lithium metal oxide nanoparticles)

RN 118819-08-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.5}LiMn_{0.5}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

RN 382151-88-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.5}-1LiMn₀-0.5O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5 - 1	7440-48-4
Mn	0 - 0.5	7439-96-5
Li	1	7439-93-2

IT 118819-08-2P, Cobalt lithium manganese oxide $\text{Co}_{0.5}\text{LiMn}_{0.5}\text{O}_2$
 382151-88-4P, Cobalt lithium manganese oxide
 ($\text{Co}_{0.5-1}\text{LiMn}_{0-0.5}\text{O}_2$)
 (electrodes and **batteries** formed from lithium metal
 oxide nanoparticles)

L36 ANSWER 12 OF 36 ZCA COPYRIGHT 2003 ACS on STN

135:229259 Layered $\text{Li}_x\text{Mn}_{1-y}\text{Co}_y\text{O}_2$ Intercalation Electrodes-Influence of
 Ion Exchange on Capacity and Structure upon Cycling. Robertson,
 Alastair D.; Armstrong, A. Robert; Bruce, Peter G. (School of
 Chemistry, University of St. Andrews, St. Andrews Fife, KY16 9ST,
 UK). Chemistry of Materials, 13(7), 2380-2386 (English) 2001.
 CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical
 Society.

AB Layered $\text{Li}_x\text{Mn}_{1-y}\text{Co}_y\text{O}_2$ with the O_3 ($\alpha\text{-NaFeO}_2$) structure has been
 prep'd. from the analogous P_3 sodium phase by ion exchange using LiBr
 in either EtOH at 80.degree. or hexanol at 160.degree.. The former
 preserves, to some extent, vacancies present on the transitional
 metal sites of the sodium phase, whereas the latter eliminates the
 vacancies. Materials with vacancies exhibit better performance as
cathodes in rechargeable lithium **batteries**. The
 2.5% Co-doped material prep'd. in EtOH exhibits capacities of 200
 mAhg^{-1} when cycled at C/8 between 2.4 and 4.6 V at 30.degree. and
 with a fade of only 0.08%/cycle. A capacity of 180 mAhg^{-1} can be
 obtained at C/2 and 200 mAhg^{-1} at C rate and 55.degree..
 Importantly, this performance is obtained despite the fact that the
 materials convert to spinel-like phases on cycling. The spinel-like
 phases that form are nanostructured, with each crystallite being
 composed of a mosaic of nanodomains. The relief of strain at the
 domain wall boundaries accompanying the cubic-tetragonal phase
 transition may explain, at least in part, the facile cycling of
 these materials over a wide compn. range (including the 3 V plateau)
 compared with high-temp. spinel which does not possess such
 nanodomains. Furthermore, vacancies present in the EtOH materials
 appear to migrate to the domain walls on cycling, rendering even
 more facile the Jahn-Teller-driven phase transformation on cycling
 these materials compared with those prep'd. in hexanol.

IT 359398-97-3P, Cobalt lithium manganese oxide
 ($\text{Co}_{0.03}\text{Li}_{0.62}\text{Mn}_{0.96}\text{O}_2$) 359399-01-2P, Cobalt lithium
 manganese oxide ($\text{Co}_{0.05}\text{Li}_{0.61}\text{Mn}_{0.95}\text{O}_2$)
 (intercalation electrode; effect of ion exchange on capacity and
 structure of layered lithium manganese cobalt oxide intercalation
 electrodes on cycling)

RN 359398-97-3 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.03}\text{Li}_{0.62}\text{Mn}_{0.96}\text{O}_2$) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2

Co	0.03	7440-48-4
Mn	0.96	7439-96-5
Li	0.62	7439-93-2

RN 359399-01-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.05}Li_{0.61}Mn_{0.95}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	0.61	7439-93-2

IT **359398-97-3P**, Cobalt lithium manganese oxide (Co_{0.03}Li_{0.62}Mn_{0.96}O₂) **359399-01-2P**, Cobalt lithium manganese oxide (Co_{0.05}Li_{0.61}Mn_{0.95}O₂) (intercalation electrode; effect of ion exchange on capacity and structure of layered lithium manganese cobalt oxide intercalation electrodes on cycling)

L36 ANSWER 13 OF 36 ZCA COPYRIGHT 2003 ACS on STN

135:183248 Lithium cobalt mixed oxides for **cathode** active materials, their manufacture, and lithium ion nonaqueous secondary **batteries**. Lu, Qi; Yoshida, Gohei; Hirao, Kazuhiko; Honjo, Yukinori (Honjo Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001223008 A2 20010817, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-212819 20000713. PRIORITY: JP 1999-343177 19991202.

AB Substituted lithium cobalt mixed oxides having compn. formula Li_xMyCo_{1-y}O₂ (M = Al, Ti, Mn, Mo, and/or Sn; x = 0.8-1.2; y = 0.001-0.10) are claimed. The oxides are manufd. by mixing powders of Li compd., Co compd., and M compd. in C1-3 aliph. alc. followed by drying and firing at 600-1100.degree. in oxidizing atm. Secondary **batteries** with Li-intercalating carbonaceous anodes, the above stated **cathodes**, separators, and Li ion-conducting nonaq. electrolytes are also claimed. The **batteries** have high capacity, excellent cycle characteristic, and heat stability.

IT **267411-54-1P**, Cobalt lithium manganese oxide (Co_{0.99}LiMn_{0.01}O₂)

(**cathode**; thermally stable lithium secondary **batteries** with lithium cobalt mixed oxide **cathodes**)

RN 267411-54-1 ZCA

CN Cobalt lithium manganese oxide (Co_{0.99}LiMn_{0.01}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.99	7440-48-4
Mn	0.01	7439-96-5
Li	1	7439-93-2

IT **267411-54-1P**, Cobalt lithium manganese oxide
(Co_{0.99}LiMn_{0.01}O₂)
(**cathode**; thermally stable lithium secondary
batteries with lithium cobalt mixed oxide
cathodes)

L36 ANSWER 14 OF 36 ZCA COPYRIGHT 2003 ACS on STN
135:109684 Manufacture of lithium-manganese mixed oxide for secondary
nonaqueous-electrolyte lithium **battery**. Azuma, Yasuo;
Katayama, Keiichi; Kazuhara, Manabu (Seimi Chemical Co., Ltd.,
Japan). Jpn. Kokai Tokkyo Koho JP 2001192210 A2 20010717, 13 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-30751 20000208.
PRIORITY: JP 1999-312085 19991102.

AB Salts contg. Li salt are melted, and then a Mn-contg. compd. is
added into the molten salts for reacting the compd. with the salts.
The Mn-contg. compd. may also contains .gtoreq.1 metal element (M)
selected from Al, Fe, Co, Ni, Cr, V, Mo, Ti, Mg, Nb, Ta, B, Ca, Ce,
Ag, Zn, Zr, Sn, Pb, and Si. Preferably, the obtained mixed oxide is
represented by Li_yMnO₂ (y = 0.3-1.3) or Li_zMn_xM_{1-x}O₂ (z = 0.3-1.3;
0.4 .ltoreq. x < 1). The **battery** using the mixed oxide as
cathode active mass can be used in wide voltage range and
has large capacity and long cycle life.

IT **180742-84-1P**, Cobalt lithium manganese oxide
(Co_{0.05}LiMn_{0.95}O₂)
(manuf. of Li-Mn mixed oxide as **cathode** active mass for
nonaq.-electrolyte Li **battery** with large capacity and
long cycle life)

RN 180742-84-1 ZCA

CN Cobalt lithium manganese oxide (Co_{0.05}LiMn_{0.95}O₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	1	7439-93-2

IT **180742-84-1P**, Cobalt lithium manganese oxide
(Co_{0.05}LiMn_{0.95}O₂)
(manuf. of Li-Mn mixed oxide as **cathode** active mass for
nonaq.-electrolyte Li **battery** with large capacity and
long cycle life)

L36 ANSWER 15 OF 36 ZCA COPYRIGHT 2003 ACS on STN

135:63759 Secondary lithium **batteries** having improved **cathodes**. Yamaki, Takahiro; Honbo, Hidetoshi; Kita, Fusaji; Idzu, Tetsuo (Hitachi Ltd., Japan; Hitachi Maxell, Ltd.). Jpn. Kokai Tokkyo Koho JP 2001167763 A2 20010622, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-349782 19991209.

AB The **batteries** have **cathodes** contg. (1) Li Co oxide active masses contg. Mg, Al, Mn, Ti, and/or Sr and (2) C-based conductors with amorphous C surface layers. The **batteries** have high energy d. and cycle performance.

IT **142447-13-0**, Cobalt lithium manganese oxide (Co_{0.97}LiMn_{0.03}O₂)
(Li **batteries** having **cathodes** contg. Li Co metal oxides and conductors covered with amorphous C for high energy d. and cycle performance)

RN 142447-13-0 ZCA

CN Cobalt lithium manganese oxide (Co_{0.97}LiMn_{0.03}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.97	7440-48-4
Mn	0.03	7439-96-5
Li	1	7439-93-2

IT **142447-13-0**, Cobalt lithium manganese oxide (Co_{0.97}LiMn_{0.03}O₂)
(Li **batteries** having **cathodes** contg. Li Co metal oxides and conductors covered with amorphous C for high energy d. and cycle performance)

L36 ANSWER 16 OF 36 ZCA COPYRIGHT 2003 ACS on STN

134:165571 Combustion synthesis and characterization of substituted lithium cobalt oxides in lithium **batteries**. Julien, C.; Camacho-Lopez, M. A.; Mohan, T.; Chitra, S.; Kalyani, P.; Gopukumar, S. (Laboratoire des Milieux Desordonnes et Heterogenes, UMR 7603, Universite Pierre et Marie Curie, Paris, 75252, Fr.). Solid State Ionics, 135(1-4), 241-248 (English) 2000. CODEN: SSIOD3. ISSN: 0167-2738. Publisher: Elsevier Science B.V..

AB Substituted lithium cobaltates LiCo_{0.5}M_{0.5}O₂ (where M = Ni, Mg, Mn, Zn) have been synthesized by the combustion of mixts. obtained from aq. solns. contg. the resp. metal nitrates, LiNO₃, and urea in stoichiometric amts. The mixts., when dried and fired at 700.degree.C, ignite and yield submicron-sized powders. Phys. properties of the synthesized products are discussed in the light of structural (XRD, SEM) and spectroscopic (FTIR and Raman) measurements. XRD results show that most of the compds. have a structure similar to LiCoO₂, while LiCo_{0.5}Mn_{0.5}O₂ crystallizes with the modified-spinel structure. FTIR and Raman measurements probed the cationic environment in LiCo_{0.5}M_{0.5}O₂ structures in order to investigate cation distribution and local distortion in the

lithiated lattice. Performances of lithiated oxides as **cathode** materials in lithium **batteries** and substitutive effect on electrochem. properties have been investigated. Stable charge-discharge features have been obsd. for Li//LiCo_{0.5}Mn_{0.5}O₂ cells cycled in the potential range from 3.0 to 4.2 V when Ni and Zn dopants are used.

IT **118819-08-2P**, Cobalt lithium manganese oxide Co_{0.5}LiMn_{0.5}O₂
(combustion synthesis and characterization of substituted lithium cobalt oxides in lithium **batteries**)

RN 118819-08-2 ZCA

CN Cobalt lithium manganese oxide (Co_{0.5}LiMn_{0.5}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.5	7440-48-4
Mn	0.5	7439-96-5
Li	1	7439-93-2

IT **118819-08-2P**, Cobalt lithium manganese oxide Co_{0.5}LiMn_{0.5}O₂
(combustion synthesis and characterization of substituted lithium cobalt oxides in lithium **batteries**)

L36 ANSWER 17 OF 36 ZCA COPYRIGHT 2003 ACS on STN

133:153101 Synthesis and host properties of tetragonal Li₂Mn₂O₄ and Li₂Co_{0.4}Mn_{1.6}O₄. West, K.; Vitins, G.; Koksang, R. (Department of Chemistry, Technical University of Denmark, Lyngby, DK-2800, Den.). Electrochimica Acta, 45(19), 3141-3149 (English) 2000. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier Science Ltd..

AB This paper presents synthesis and electrochem. properties of tetragonal Li₂Mn₂O₄ and its cobalt doped analog Li₂Co_{0.4}Mn_{1.6}O₄. The materials are compared as host materials for lithium insertion and the behavior during the initial lithium extn. as well as on repeated cycling is presented. These materials show an initial lithium extn. capacity between 200 and 270 mAh/g. On repeated cycling, they are converted into spinel-like lattices with reversible capacities in the range 82-90 mAh/g. As they are chem. compatible with the manganese spinel, they will be well suited as additives compensating for the capacity loss during the initial forming cycle of spinel-based lithium-ion cells.

IT **207990-15-6P**, Cobalt lithium manganese oxide Co_{0.2}LiMn_{0.8}O₂
(synthesis and host properties of tetragonal Li₂Mn₂O₄ and Li₂Co_{0.4}Mn_{1.6}O₄)

RN 207990-15-6 ZCA

CN Cobalt lithium manganese oxide (Co_{0.2}LiMn_{0.8}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	2	17778-80-2
Co	0.2	7440-48-4
Mn	0.8	7439-96-5
Li	1	7439-93-2

IT 207990-15-6P, CObalt lithium manganese oxide $\text{Co}_{0.2}\text{LiMn}_{0.8}\text{O}_2$
(synthesis and host properties of tetragonal $\text{Li}_2\text{Mn}_2\text{O}_4$ and
 $\text{Li}_2\text{Co}_{0.4}\text{Mn}_{1.6}\text{O}_4$)

L36 ANSWER 18 OF 36 ZCA COPYRIGHT 2003 ACS on STN

132:340425 High-speed voltammetry of Mn-doped LiCoO_2 using a
microelectrode technique. Waki, Shinichi; Dokko, Kaoru; Itoh,
Takashi; Nishizawa, Matsuhiko; Abe, Takayuki; Uchida, Isamu
(Department of Applied Chemistry, Graduate School of Engineering,
Tohoku University, Sendai, 980-8579, Japan). Journal of Solid State
Electrochemistry, 4(4), 205-209 (English) 2000. CODEN: JSSEFS.
ISSN: 1432-8488. Publisher: Springer-Verlag.

AB The microelectrode technique was applied to study the electrochem.
properties of $\text{LiCo}_{1-x}\text{Mn}_x\text{O}_2$ ($x = 0, 0.01, 0.05, 0.2$, or 0.5)
synthesized using the citrate process. From the x-ray diffraction
measurements, an expansion of the c-axis and a decrease in the
crystal size of the materials were obsd. on substitution of Mn into
 LiCoO_2 . In the electrochem. measurements, the high-speed cyclic
voltammogram for the Mn-substituted materials gave one set of peaks
at 3.9 V vs. Li/Li^+ . The apparent chem. diffusion const. (D_{app}) of
 $\text{LiCo}_{0.8}\text{Mn}_{0.2}\text{O}_2$ obtained from the potential step expt. was 6.4
times $10^{-8} \text{ cm}^2/\text{s}$, which is larger than that of LiCoO_2 . The
increase in D_{app} is attributable to the expansion of the c-axis
and/or the decrease in the crystal size. The increase in Mn
substitution up to 20% lead to an improvement in the kinetic
reversibility and the cycle stability of LiCoO_2 .

IT 142447-12-9, Cobalt lithium manganese oxide
($\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$) 267411-54-1, Cobalt lithium manganese
oxide ($\text{Co}_{0.99}\text{LiMn}_{0.01}\text{O}_2$)
(high-speed voltammetry of Mn-doped LiCoO_2 using microelectrode
technique and x-ray diffraction by)

RN 142447-12-9 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

RN 267411-54-1 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.99}\text{LiMn}_{0.01}\text{O}_2$) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.99	7440-48-4
Mn	0.01	7439-96-5
Li	1	7439-93-2

IT **142447-12-9**, Cobalt lithium manganese oxide
 (Co_{0.95}LiMn_{0.05}O₂) **267411-54-1**, Cobalt lithium manganese
 oxide (Co_{0.99}LiMn_{0.01}O₂)
 (high-speed voltammetry of Mn-doped LiCoO₂ using microelectrode
 technique and x-ray diffraction by)

L36 ANSWER 19 OF 36 ZCA COPYRIGHT 2003 ACS on STN

132:310815 Manufacture of **cathode** active mass for lithium ion
batteries by controlled crystallization. Wan, Chunrong; Li,
 Yangxing; Jiang, Changyin (Qinghua University, Peop. Rep. China).
 Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1218304 A 19990602,
 10 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 1998-124404
 19981030.

AB The **cathode** active mass is manufd. by: mixing 0.3-3M
 solns. of salts of required components, except Li, at stoichiometric
 ratio need for the active mass, supplying the soln. mixt. together
 with 0.1-2M NaOH and a chelating agent to a reaction tank under a
 500-1500 rpm stirring, controlling the pH of the mixt. at 10-14 by
 adjusting the supply of NaOH, controlling the solid content in the
 reaction mixt. at <70% by adjusting the supply of the salt soln.,
 and keeping a retention time of 10-35 h of the reaction mixt. in the
 tank to form a precursor; mixing the precursor and a Li salt at
 required stoichiometric ratio and grinding the mixt.; and sintering
 the mixt. at 500-900.degree. for 4-15 h. The salt is preferably
 sulfate, nitrate, or chloride and the chelating agent is NH₄OH,
 H₂NCH₂CH₂NH₂, and/or EDTA.

IT **142447-12-9P**, Cobalt lithium manganese oxide
 (Co_{0.95}LiMn_{0.05}O₂)
 (manuf. of **cathode** active mass for secondary lithium
batteries by controlled crystn.)

RN 142447-12-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.95}LiMn_{0.05}O₂) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

IT **142447-12-9P**, Cobalt lithium manganese oxide
 (Co_{0.95}LiMn_{0.05}O₂)

(manuf. of **cathode** active mass for secondary lithium
batteries by controlled crystn.)

L36 ANSWER 20 OF 36 ZCA COPYRIGHT 2003 ACS on STN

132:83893 First principles calculations for lithiated manganese oxides. Prasad, R.; Benedek, R.; Thackeray, M. M.; Wills, J. M.; Yang, L. H. (Chemical Technology Division, Argonne National Laboratory, USA). Materials Research Society Symposium Proceedings, 548 (Solid State Ionics V), 137-142 (English) 1999. CODEN: MRSPDH. ISSN: 0272-9172. Publisher: Materials Research Society.

AB First principles calcns. within the local-spin-d.-functional theory (LSDFT) framework are presented of densities of electronic states for MnO, LiMnO₂ in the monoclinic and orthorhombic structures, cubic LiMn₂O₄ spinel and λ -MnO₂ (delithiated spinel), all in antiferromagnetic spin configurations. The changes in energy spectra as the Mn oxidn. state varies between 2+ and 4+ are illustrated. Preliminary calcns. for Co-doped LiMnO₂ are presented, and the destabilization of a monoclinic relative to a rhombohedral structure is discussed.

IT 253875-65-9, Cobalt lithium manganese oxide ((Co,Mn)LiO₂)

(LSDFT calcns. of Co-doped lithium manganese oxide Co_xLiMn_{1-x}O₂)

RN 253875-65-9 ZCA

CN Cobalt lithium manganese oxide ((Co,Mn)LiO₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0 - 1	7440-48-4
Mn	0 - 1	7439-96-5
Li	1	7439-93-2

IT 253875-65-9, Cobalt lithium manganese oxide ((Co,Mn)LiO₂)

(LSDFT calcns. of Co-doped lithium manganese oxide Co_xLiMn_{1-x}O₂)

L36 ANSWER 21 OF 36 ZCA COPYRIGHT 2003 ACS on STN

131:47194 Manufacture of **cathode** active mass by firing lithium mixed oxide for lithium secondary **batteries**. Yoshida, Tomokazu; Kita, Yoshinori; Fujimoto, Masahisa; Noma, Toshiyuki; Nishio, Koji (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11162466 A2 19990618 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-347152 19971201.

AB The title active mass is manufd. by following steps; (1) firing mixts. of first oxide powder LiANiPCoQMnRO₂ (A = 0.9-1.1; 0.5 < P .ltoreq. 1.0; 0 .ltoreq. Q < 0.5; R = 0-0.3; P + Q + R = 1) and second oxide powder LiBNiSCoTMnUO₂ (B = 0.9-1.1; 0 .ltoreq. S < 0.5; 0.5 < T .ltoreq. 1.0; U = 0-0.3; S + T + U = 1); (2) grinding the sintered bodies to give the first and second oxide powder attached with third oxides LiCNiXCoYMnZO₂ (C = 0.9-1.1; S < X < P; Q < Y < T; Z = 0-0.3; X + Y + Z = 1) on each surfaces. Resulting **batteries** have high capacity and voltage.

IT 134398-47-3, Cobalt Lithium Manganese oxide (Co_{0.9}LiMn_{0.1}O₂)

(lithium nickel cobalt manganese composite oxides manufd. by firing and grinding for **cathodes in batteries**)

RN 134398-47-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

IT **134398-47-3**, Cobalt Lithium Manganese oxide (Co_{0.9}LiMn_{0.1}O₂) (lithium nickel cobalt manganese composite oxides manufd. by firing and grinding for **cathodes in batteries**)

L36 ANSWER 22 OF 36 ZCA COPYRIGHT 2003 ACS on STN

130:239956 **Cathode** active mass, its manufacture, and secondary lithium-ion **battery** using it. Maegawa, Takeyuki; Nozaki, Ayumu; Uchikawa, Hideoki; Uchida, Isamu (Mitsubishi Electric Corp., Japan). Jpn. Kokai Tokkyo Koho JP 11067205 A2 19990309 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-228251 19970825.

AB The active mass having a compn. LiCo(1-y)Mn_yO₂ (y = 0.01-0.3) is manufd. by the following steps: (1) mixing a water-sol. Li salt, Co salt, and Mn salt in a predetd. mixing ratio with citric acid in a soln., (2) removing the solvent from the mixt. soln. for gelation, (3) drying the gel to form a precursor, and (4) firing the precursor to obtain the active mass particles. The active mass particles and the **battery** using the active mass are also claimed. The active mass particles have a uniform compn. and the **battery** has high capacity and shows good cycling performance.

IT **118819-39-9P**, Cobalt lithium manganese oxide (Co_{0.8}LiMn_{0.2}O₂) **142447-11-8P**, Cobalt lithium manganese oxide (Co_{0.85}LiMn_{0.15}O₂) **142447-12-9P**, Cobalt lithium manganese oxide (Co_{0.95}LiMn_{0.05}O₂) **221332-82-7P**, Cobalt lithium manganese oxide (Co_{0.7-0.99}LiMn_{0.01-0.3}O₂) (manuf. of LiCoMn oxide **cathode** active mass particles having uniform compn. for Li-ion **battery**)

RN 118819-39-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.8}LiMn_{0.2}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.8	7440-48-4

Mn	0.2	7439-96-5
Li	1	7439-93-2

RN 142447-11-8 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.85}LiMn_{0.15}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.85	7440-48-4
Mn	0.15	7439-96-5
Li	1	7439-93-2

RN 142447-12-9 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.95}LiMn_{0.05}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

RN 221332-82-7 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.7-0.99}LiMn_{0.01-0.30}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.7 - 0.99	7440-48-4
Mn	0.01 - 0.3	7439-96-5
Li	1	7439-93-2

IT **118819-39-9P**, Cobalt lithium manganese oxide (Co_{0.8}LiMn_{0.2}O₂) **142447-11-8P**, Cobalt lithium manganese oxide (Co_{0.85}LiMn_{0.15}O₂) **142447-12-9P**, Cobalt lithium manganese oxide (Co_{0.95}LiMn_{0.05}O₂) **221332-82-7P**, Cobalt lithium manganese oxide (Co_{0.7-0.99}LiMn_{0.01-0.30}O₂) (manuf. of LiCoMn oxide **cathode** active mass particles having uniform compn. for Li-ion **battery**)

L36 ANSWER 23 OF 36 ZCA COPYRIGHT 2003 ACS on STN
 129:30170 Secondary nonaqueous electrolyte lithium **batteries** and manufacture of their **cathode** materials. Murata, Toshihide; Bito, Yasuhiko; Ito, Shuji; Toyoguchi, Yoshinori (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai

Tokkyo Koho JP 10134812 A2 19980522 Heisei, 9 pp. (Japanese).

CODEN: JKXXAF. APPLICATION: JP 1996-290197 19961031.

AB The **batteries** use **cathodes** including (1) $\text{LiMn}_{1-x}\text{MxO}_2$ ($\text{M} = \text{Fe}, \text{Ni}, \text{Co}, \text{Cr}, \text{Al}$; $x = 0.01-0.2$) which are manufd. from Li compds. and $\text{Mn}_{1-x}\text{MxOOH}$ or (2) $\text{Li}_{1-y}\text{AyMnO}_2$ ($\text{A} = \text{Mg}, \text{Ca}, \text{Sr}, \text{Ba}$; $y = 0.005-0.1$) which are manufd. from Li compds. and $\text{MnOOH}_{1-y}\text{Ay}$ or MnAyOOH . The **batteries** have high energy d. and cycle performance due to the **cathode** materials in which change of crystal structure of LiMnO_2 is suppressed by the above elements as substitutes for Li or Mn.

IT **118819-42-4P**, Cobalt lithium manganese oxide ($\text{Co}_{0.1}\text{LiMn}_{0.9}\text{O}_2$) **180742-84-1P**, Cobalt lithium manganese oxide ($\text{Co}_{0.05}\text{LiMn}_{0.95}\text{O}_2$) **207990-13-4P**, Cobalt lithium manganese oxide ($\text{Co}_{0.01}\text{LiMn}_{0.99}\text{O}_2$) **207990-15-6P**, Cobalt lithium manganese oxide ($\text{Co}_{0.2}\text{LiMn}_{0.8}\text{O}_2$)

(Li Mn metal oxide **cathode** and its manuf. for high energy d. and cycle performance of Li **battery**)

RN 118819-42-4 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.1}\text{LiMn}_{0.9}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	1	7439-93-2

RN 180742-84-1 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.05}\text{LiMn}_{0.95}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	1	7439-93-2

RN 207990-13-4 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.01}\text{LiMn}_{0.99}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.01	7440-48-4
Mn	0.99	7439-96-5
Li	1	7439-93-2

RN 207990-15-6 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.2}LiMn_{0.8}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.2	7440-48-4
Mn	0.8	7439-96-5
Li	1	7439-93-2

IT 118819-42-4P, Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) 180742-84-1P, Cobalt lithium manganese oxide (Co_{0.05}LiMn_{0.95}O₂) 207990-13-4P, Cobalt lithium manganese oxide (Co_{0.01}LiMn_{0.99}O₂) 207990-15-6P, Cobalt lithium manganese oxide (Co_{0.2}LiMn_{0.8}O₂) (Li Mn metal oxide **cathode** and its manuf. for high energy d. and cycle performance of Li **battery**)

L36 ANSWER 24 OF 36 ZCA COPYRIGHT 2003 ACS on STN
 129:30161 High capacity and energy density lithium **batteries** and manufacture of their **cathodes**. Kosugi, Katsuhiko (Yamaha Corp., Japan). Jpn. Kokai Tokkyo Koho JP 10106543 A2 19980424 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-259895 19960930.

AB The **batteries** use hexagonal cryst. multiple oxide $\text{Li}_x\text{MyAl-yO}_{1+x}$ (M = Group 7B -8B transition metal; A = M', Na, K, Rb, Cs, Al, Ga, In, Tl, B, Mg, Ca, Sr, Ba, Pb; M' = transition metal other than M; x = 1.3-2.5; yr = 0.5-0.999) as **cathode** active mass. The **cathodes** are manufd. by mixing oxides of M, A, and Li; firing the mixts. at 600-1200.degree. for .gtoreq.30 min to form the multiple oxide, and molding the multiple oxide. Another method uses carbonates, nitrates, or hydroxides of A and Li in place of their oxide and a 5-72 h firing at 600-1200.degree. to form the multiple oxide.

IT 208041-92-3P, Cobalt lithium manganese oxide (Co_{0.95}Li_{1-2.5}Mn_{0.05}O_{2-3.5}) (compsn. and manuf. of hexagonal cryst. lithium transition metal oxide **cathode** active mass for **batteries**)

RN 208041-92-3 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.95}Li_{1-2.5}Mn_{0.05}O_{2-3.5}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2 - 3.5	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1 - 2.5	7439-93-2

IT **208041-92-3P**, Cobalt lithium manganese oxide
($\text{Co}_{0.95}\text{Li}_{1-2.5}\text{Mn}_{0.05}\text{O}_{2-3.5}$)
(compns. and manuf. of hexagonal cryst. lithium transition metal
oxide **cathode** active mass for **batteries**)

L36 ANSWER 25 OF 36 ZCA COPYRIGHT 2003 ACS on STN

127:348762 Electronic conductivity of LiCoO_2 and its enhancement by
magnesium doping. Tukamoto, H.; West, A. R. (Department of
Chemistry, Univ. of Aberdeen, Aberdeen, AB24 3UE, UK). Journal of
the Electrochemical Society, 144(9), 3164-3168 (English) 1997.
CODEN: JESOAN. ISSN: 0013-4651. Publisher: Electrochemical
Society.

AB LiCoO_2 the active **cathode** material in com. rechargeable
lithium **batteries**, is shown to be a p-type semiconductor,
assocd. with the presence of a small concn. of Co^{4+} ions. Its cond.
at room temp. can be increased by over two order of magnitude, to
.apprx. 0.5 S cm^{-1} , by partial substitution of Co^{3+} by Mg^{2+} and
compensating hole creation. The electrochem. performance of
 $\text{LiMg}_{0.05}\text{Co}_{0.95}\text{O}_2$ is comparable to that of LiCoO_2 ; a small redn. in
capacity, assocd. with a redn. in Co^{3+} content, occurs but good
reversibility is retained and, in contrast to LiCoO_2 , the Mg-doped
material is single phase throughout the charge/discharge cycle.

IT **142447-12-9**, Cobalt Lithium manganese oxide $\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$
(electronic cond. of LiCoO_2 and its enhancement by magnesium
doping)

RN 142447-12-9 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

IT **142447-12-9**, Cobalt Lithium manganese oxide $\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_2$
(electronic cond. of LiCoO_2 and its enhancement by magnesium
doping)

L36 ANSWER 26 OF 36 ZCA COPYRIGHT 2003 ACS on STN

127:53451 Secondary alkaline **battery** and manufacture of its
cathode. Yamamura, Yasuharu; Katsumoto, Masumi; Kaiya,
Hideo (Matsushita Electric Industrial Co., Ltd., Japan). Eur. Pat.
Appl. EP 774793 A1 19970521, 23 pp. DESIGNATED STATES: R: DE, FR,
GB. (English). CODEN: EPXXDW. APPLICATION: EP 1996-308260
19961115. PRIORITY: JP 1995-298051 19951116; JP 1996-232730
19960903.

AB The **cathode** comprises a Ni hydroxide active material and
2-30 wt.% compd. oxide based on the amt. of the Ni hydroxide. The

compd. oxide contains .gtoreq.1 transition metal element and .gtoreq.1 rare earth element or alk. earth metal element. The compd. oxide has cond. .gtoreq.10⁻² S/cm at 25.degree. and stability in an alk. electrolyte. The **battery** having this **cathode** shows excellent characteristics in a long-term preservation at a high temp., capacity restoration, and charge/discharge cycle life.

IT **191229-75-1DP**, Cobalt lithium manganese oxide (Co_{0.9}Li_{0.8}Mn_{0.102}), with defect amt. of oxygen (nickel hydroxide **battery cathodes** contg.)
 RN 191229-75-1 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.9}Li_{0.8}Mn_{0.102}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	0.8	7439-93-2

IT **191229-75-1DP**, Cobalt lithium manganese oxide (Co_{0.9}Li_{0.8}Mn_{0.102}), with defect amt. of oxygen (nickel hydroxide **battery cathodes** contg.)

L36 ANSWER 27 OF 36 ZCA COPYRIGHT 2003 ACS on STN
 126:253351 Complex lithium manganese oxides for **battery cathode** and their preparation. Ellgen, Paul C. (Kerr-McGee Corporation, USA). U.S. US 5605773 A 19970225, 8 pp. (English). CODEN: USXXAM. APPLICATION: US 1995-568225 19951206.

AB Li₂MbMn₂-bO₄ is prep'd. by providing LiMbMn₂-bO₄ and a source of Li, dissolving Li from the Li source in a liq. medium in which Li generates solvated electrons or the reduced form of an electron-transfer catalyst, and placing the LiMbMn₂-bO₄ in contact with the liq. medium contg. the dissolved Li and the solvated electrons or the reduced form of the electron-transfer catalyst. M is selected from Al, Ti, V, Cr, Fe, Co, Ni, and Cu and b = .apprx.0.001-1.999.

IT **118819-42-4P**, Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.902}) (prepn. for **battery cathodes**)
 RN 118819-42-4 ZCA
 CN Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.902}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5

Li | 1 | 7439-93-2

IT **118819-42-4P**, Cobalt lithium manganese oxide
(Co_{0.1}LiMn_{0.9}O₂)
(prep. for **battery cathodes**)

L36 ANSWER 28 OF 36 ZCA COPYRIGHT 2003 ACS on STN
125:173371 Secondary lithium **batteries** with improved
cathodes. Iguchi, Takaaki; Kuwana, Koji (Kaajio Peeshingu
Risaachi Rabo, Japan). Jpn. Kokai Tokkyo Koho JP 08162115 A2
19960621 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1994-329644 19941202.

AB The **batteries** use Li Mn mixed oxide as **cathode**
active mass, which is prep. from Mn compds. having Mn partially
substituted with M (.gtoreq.1 selected from nonmetals and/or
semimetals selected from Group IIIA, IVA, and/or VA, alk. earth
metals, and/or metals other than Mn). The Mn compds. may be M_nxM_yO_z
(0.8 .ltoreq.x .ltoreq.1, 0 < y .ltoreq.0.2, x + y = 1, 1 .ltoreq.z
<2.2) or .gamma.-type Mn₁-.alpha.M.alpha.OOH (0 < .alpha. .ltoreq.
0.3). The **batteries** have long cycle life.

IT **118819-42-4P**, Cobalt lithium manganese oxide
(Co_{0.1}LiMn_{0.9}O₂) **180742-84-1P**, Cobalt lithium manganese
oxide (Co_{0.05}LiMn_{0.95}O₂)
(compns. and manuf. of partially substituted Li Mn oxide
cathodes for batteries)

RN 118819-42-4 ZCA

CN Cobalt lithium manganese oxide (Co_{0.1}LiMn_{0.9}O₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.1	7440-48-4
Mn	0.9	7439-96-5
Li	1	7439-93-2

RN 180742-84-1 ZCA

CN Cobalt lithium manganese oxide (Co_{0.05}LiMn_{0.95}O₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.05	7440-48-4
Mn	0.95	7439-96-5
Li	1	7439-93-2

IT **118819-42-4P**, Cobalt lithium manganese oxide
(Co_{0.1}LiMn_{0.9}O₂) **180742-84-1P**, Cobalt lithium manganese
oxide (Co_{0.05}LiMn_{0.95}O₂)

(compns. and manuf. of partially substituted Li Mn oxide
cathodes for batteries)

L36 ANSWER 29 OF 36 ZCA COPYRIGHT 2003 ACS on STN

124:122056 Lithium secondary **battery** having improved charge-discharge characteristic and safety. Kubota, Tadahiko; Tanaka, Mitsutoshi (Fuji Photo Film Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07263028 A2 19951013 Heisei, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-55614 19940325.

AB In a Li secondary **battery**, a **neg. electrode** active mass is an oxide contg. .gtoreq.1 of a Group IVA element, a Group VA element, In, Zn, and Mg, and a pos. electrode active mass is $\text{Li}_x\text{Co}_{y1}\text{M}_y\text{O}_z$, where M is Ni, V, Fe, Mn, Ti, or Cu; $y_1 = 0.75-1.0$; $y_2 = 0-0.25$; $y_1 + y_2 = 1$; $x = 0.7-1.2$, and $z = 1.5-3.0$. In the pos. electrode active mass, the av. diam of particles D is $3 < D < 9.0 \mu\text{m}$, and the vol. ratio of particles having a diam. of $3-150 \mu\text{m}$ is .gtoreq.75%. The preferred pos. electrode active mass contains Sn oxides. The **battery** has improved charge-discharge characteristic and safety.

IT 173049-97-3, Cobalt lithium manganese oxide ($\text{Co}_{0.85}\text{LiMn}_{0.15}\text{O}_{1.7-2.3}$) 173049-98-4, Cobalt lithium manganese oxide ($\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_{1.7-2.3}$) 173049-99-5, Cobalt lithium manganese oxide ($\text{Co}_{0.97}\text{Li}_{1.02}\text{Mn}_{0.03}\text{O}_{1.7-2.3}$) (pos. electrode active mass, in lithium secondary **battery** having improved charge-discharge characteristic and safety)

RN 173049-97-3 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.85}\text{LiMn}_{0.15}\text{O}_{1.7-2.3}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1.7 - 2.3	17778-80-2
Co	0.85	7440-48-4
Mn	0.15	7439-96-5
Li	1	7439-93-2

RN 173049-98-4 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.95}\text{LiMn}_{0.05}\text{O}_{1.7-2.3}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	1.7 - 2.3	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

RN 173049-99-5 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.97}\text{Li}_{1.02}\text{Mn}_{0.03}\text{O}_{1.7-2.3}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	1.7 - 2.3	17778-80-2
Co	0.97	7440-48-4
Mn	0.03	7439-96-5
Li	1.02	7439-93-2

IT **173049-97-3**, Cobalt lithium manganese oxide
 (Co_{0.85}LiMn_{0.15}O_{1.7-2.3}) **173049-98-4**, Cobalt lithium
 manganese oxide (Co_{0.95}LiMn_{0.05}O_{1.7-2.3}) **173049-99-5**,
 Cobalt lithium manganese oxide (Co_{0.97}Li_{1.02}Mn_{0.03}O_{1.7-2.3})
 (pos. electrode active mass, in lithium secondary **battery**
 having improved charge-discharge characteristic and safety)

L36 ANSWER 30 OF 36 ZCA COPYRIGHT 2003 ACS on STN
 122:218571 Secondary nonaqueous lithium **batteries** with
 improved **cathodes**. Kubota, Tadahiko (Fuji Photo Film Co
 Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 06325791 A2 19941125 Heisei,
 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-113066
 19930514.

AB The **batteries** use **cathodes** composed of a powder
 having av. particle diam. 0.01-5.0 .mu.m agglomerated into granules
 having av. diam. 0.1-15 .mu.m. The **cathode** active mass is
 preferably LixMyM'zOw (M = Ni, V, or esp. Co; M' = Ni, V, Fe, Mn,
 Ti, B, or P; x = 0.1.apprx.1.5; yr = 0.8.apprx.1.4; z = 0.apprx.0.5;
 and w = 1.90.apprx.4.2), the electrolyte solvent is propylene
 carbonate or ethylene carbonate mixed with MeOC₂H₄OMe, and the Li
 intercalating anodes is LipAOr (A = Ti, V, Mn, Co, Fe, Nb, and/or
 Mo; p = 0.apprx.3.1; and r = 1.6.apprx.4.1).

IT **142447-12-9**, Cobalt lithium manganese oxide
 (Co_{0.95}LiMn_{0.05}O₂)
 (controlled particles for **cathode** active oxides in
 secondary lithium **batteries**)

RN 142447-12-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.95}LiMn_{0.05}O₂) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

IT **142447-12-9**, Cobalt lithium manganese oxide
 (Co_{0.95}LiMn_{0.05}O₂)
 (controlled particles for **cathode** active oxides in
 secondary lithium **batteries**)

L36 ANSWER 31 OF 36 ZCA COPYRIGHT 2003 ACS on STN

122:60158 Low self discharge secondary nonaqueous **batteries**.

Kubota, Tadahiko; Idota, Yoshio (Fuji Photo Film Co., Ltd., Japan).

Jpn. Kokai Tokkyo Koho JP 06243897 A2 19940902 Heisei, 21 pp.

(Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-264994 19931022.

PRIORITY: JP 1992-344512 19921224.

AB The **batteries**, using light metals, their alloys, or Li intercalating materials for anodes, use **cathode** active mass having av particle diam 2.0-9.0 μm with ≥ 60 vol.% particles having diam. 1.0-15 μm . Preferably, the **cathode** active mass is Li Co oxide, where part of the Co may be substituted by Ni, V, Fe, Mn, Ti, and/or Cu.

IT **118819-40-2P**, Cobalt lithium manganese oxide ($\text{Co}_0.7\text{LiMn}_0.3\text{O}_2$) **160151-75-7P**, Cobalt lithium manganese oxide ($\text{Co}_0.96\text{Li}_0.93\text{Mn}_0.04\text{O}_2$) **160151-82-6P**, Cobalt lithium manganese oxide ($\text{Co}_0.95\text{Li}_1.02\text{Mn}_0.05\text{O}_2$) **160151-89-3P**, Cobalt lithium manganese oxide ($\text{Co}_0.7\text{Li}_0.97\text{Mn}_0.3\text{O}_2$) (secondary lithium **batteries** with improved **cathodes** for low self discharge)

RN 118819-40-2 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_0.7\text{LiMn}_0.3\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.7	7440-48-4
Mn	0.3	7439-96-5
Li	1	7439-93-2

RN 160151-75-7 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_0.96\text{Li}_0.93\text{Mn}_0.04\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.96	7440-48-4
Mn	0.04	7439-96-5
Li	0.93	7439-93-2

RN 160151-82-6 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_0.95\text{Li}_1.02\text{Mn}_0.05\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.95	7440-48-4

Mn	0.05	7439-96-5
Li	1.02	7439-93-2

RN 160151-89-3 ZCA

CN Cobalt lithium manganese oxide (Co_{0.7}Li_{0.97}Mn_{0.302}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.7	7440-48-4
Mn	0.3	7439-96-5
Li	0.97	7439-93-2

IT **118819-40-2P**, Cobalt lithium manganese oxide (Co_{0.7}LiMn_{0.302}) **160151-75-7P**, Cobalt lithium manganese oxide (Co_{0.96}Li_{0.93}Mn_{0.0402}) **160151-82-6P**, Cobalt lithium manganese oxide (Co_{0.95}Li_{1.02}Mn_{0.0502}) **160151-89-3P**, Cobalt lithium manganese oxide (Co_{0.7}Li_{0.97}Mn_{0.302}) (secondary lithium **batteries** with improved **cathodes** for low self discharge)

L36 ANSWER 32 OF 36 ZCA COPYRIGHT 2003 ACS on STN
120:303356 Lithium secondary **batteries** and their preparation. Matsumoto, Kazunobu; Kawakami, Akira; Yamanaka, Shoji (Hitachi Maxell, Japan). Jpn. Kokai Tokkyo Koho JP 06044973 A2 19940218 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-216411 19920721.

AB The **batteries** comprise anodes contg. Li, Li alloys, or Li compds. and Li_yCo_xMn_xO₂ (x + y = 1) **cathode**. The **cathode** is prepd. by heating mixts. of LiCoO₂ and Li-free Mn oxides. The **batteries** have a long cycle life.

IT **155274-14-9**, Cobalt lithium manganese oxide (Co_{0.9}Li_{0.9}Mn_{0.102}) (**cathodes**, for lithium **batteries**)

RN 155274-14-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.9}Li_{0.9}Mn_{0.102}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	0.9	7439-93-2

IT **155274-14-9**, Cobalt lithium manganese oxide (Co_{0.9}Li_{0.9}Mn_{0.102}) (**cathodes**, for lithium **batteries**)

L36 ANSWER 33 OF 36 ZCA COPYRIGHT 2003 ACS on STN

118:151032 Secondary nonaqueous-electrolyte **batteries** with improved **cathodes**. Mifuji, Yasuhiko; Ito, Shuji; Murai, Sukeyuki; Hasegawa, Masaki; Toyoguchi, Yoshinori (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04282561 A2 19921007 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-44738 19910311.

AB The **batteries** comprise anodes from Li, Li alloys, or Li compds. and fibrous graphite-contg. $\text{Li}_y\text{Co}_{1-x}\text{M}_x\text{O}_2$ **cathodes**, where M = Mn, Ni, and/or Cr, $x \leq 0.5$, $y = 0.85-1.15$. The **cathodes** may contain 0.5-20% fibrous graphite. The **cathodes** show excellent current collecting properties and the **batteries** using these **cathodes** have a long cycle life.

IT 134398-47-3, Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) (**cathodes**, contg. fibrous graphite, for nonaq. **batteries**)

RN 134398-47-3 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

IT 134398-47-3, Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) (**cathodes**, contg. fibrous graphite, for nonaq. **batteries**)

L36 ANSWER 34 OF 36 ZCA COPYRIGHT 2003 ACS on STN

118:42333 Secondary nonaqueous-electrolyte lithium **batteries**. Mifuji, Yasuhiko; Murai, Sukeyuki; Ito, Shuji; Toyoguchi, Yoshinori (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04237967 A2 19920826 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-5038 19910121.

AB The **battery** comprise **cathodes** contg. $\text{Li}_y\text{Co}_{1-x}\text{M}_x\text{O}_2$ (M = Mn, Ni, Cr; $x \leq 0.5$; $y = 0.85-1.15$) active materials and alkali metal hydroxides additives. The **batteries** show low self discharge.

IT 134398-47-3, Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) (**cathodes**, contg. alkali metal hydroxides, for secondary lithium **batteries**)

RN 134398-47-3 ZCA

CN Cobalt lithium manganese oxide ($\text{Co}_{0.9}\text{LiMn}_{0.1}\text{O}_2$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

IT 134398-47-3, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂)
(**cathodes**, contg. alkali metal hydroxides, for
secondary lithium **batteries**)

L36 ANSWER 35 OF 36 ZCA COPYRIGHT 2003 ACS on STN
117:52449 Nonaqueous secondary **batteries** with lithium cobalt
manganese oxide **cathodes**. Nishiyama, Akiyoshi; Ozaki,
Yoshiyuki; Eda, Nobuo (Matsushita Electric Industrial Co., Ltd.,
Japan). Jpn. Kokai Tokkyo Koho JP 04028162 A2 19920130 Heisei, 5
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-133429
19900523.

AB Li **batteries** use LiCo_{1-x}Mn_xO₂ (0.02 .ltoreq. x .ltoreq.
0.35) for their **cathodes**. The **batteries** have
long shelf life at charged state at high temps. and long cycle life.

IT 134398-47-3, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂)
142447-11-8, Cobalt lithium manganese oxide
(Co_{0.85}LiMn_{0.15}O₂) 142447-12-9, Cobalt lithium manganese
oxide (Co_{0.95}LiMn_{0.05}O₂) 142447-13-0, Cobalt lithium
manganese oxide (Co_{0.97}LiMn_{0.03}O₂) 142447-14-1, Cobalt
lithium manganese oxide (Co_{0.98}LiMn_{0.02}O₂)
(**cathodes**, for lithium **batteries**)

RN 134398-47-3 ZCA
CN Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

RN 142447-11-8 ZCA
CN Cobalt lithium manganese oxide (Co_{0.85}LiMn_{0.15}O₂) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.85	7440-48-4
Mn	0.15	7439-96-5
Li	1	7439-93-2

RN 142447-12-9 ZCA

CN Cobalt lithium manganese oxide (Co_{0.95}LiMn_{0.05}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.95	7440-48-4
Mn	0.05	7439-96-5
Li	1	7439-93-2

RN 142447-13-0 ZCA

CN Cobalt lithium manganese oxide (Co_{0.97}LiMn_{0.03}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.97	7440-48-4
Mn	0.03	7439-96-5
Li	1	7439-93-2

RN 142447-14-1 ZCA

CN Cobalt lithium manganese oxide (Co_{0.98}LiMn_{0.02}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.98	7440-48-4
Mn	0.02	7439-96-5
Li	1	7439-93-2

IT 134398-47-3, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂)
 142447-11-8, Cobalt lithium manganese oxide
 (Co_{0.85}LiMn_{0.15}O₂) 142447-12-9, Cobalt lithium manganese
 oxide (Co_{0.95}LiMn_{0.05}O₂) 142447-13-0, Cobalt lithium
 manganese oxide (Co_{0.97}LiMn_{0.03}O₂) 142447-14-1, Cobalt
 lithium manganese oxide (Co_{0.98}LiMn_{0.02}O₂)
 (cathodes, for lithium batteries)

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115:12385 Cathode-active material for secondary, lithium,
 nonaqueous-electrolyte batteries. Toyoguchi, Yoshinori
 (Matsushita Electric Industrial Co., Ltd., Japan). Eur. Pat. Appl.
 EP 421421 A1 19910410, 15 pp. DESIGNATED STATES: R: DE, FR, GB.
 (English). CODEN: EPXXDW. APPLICATION: EP 1990-119051 19901004.
 PRIORITY: JP 1989-262430 19891006.

AB The material of the title batteries with a nonaq.
 electrolyte contg. a Li compd. is Li_xCo_{1-y}MyO₂, where x = 0.85-1.3,

y = 0.05-0.35, and M is W, Mn, Ta, Ti, and/or Nb. **Batteries** using this material have a high capacity retention in charge-discharge cycling.

IT **134398-42-8**, Cobalt lithium manganese oxide
(Co_{0.7}-0.9Li₁-1.3Mn_{0.1}-0.3O₂)
(**cathodes**, for secondary **batteries**)
RN 134398-42-8 ZCA
CN Cobalt lithium manganese oxide (Co_{0.7}-0.9Li₁-1.3Mn_{0.1}-0.3O₂) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.7 - 0.9	7440-48-4
Mn	0.1 - 0.3	7439-96-5
Li	1 - 1.3	7439-93-2

IT **134398-47-3**, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂)
134398-51-9, Cobalt lithium manganese oxide
(Co_{0.6}-0.98Li_{0.8}-1.4Mn_{0.02}-0.4O₂)
(**cathodes**, performance of, in lithium **batteries**)
)

RN 134398-47-3 ZCA
CN Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.9	7440-48-4
Mn	0.1	7439-96-5
Li	1	7439-93-2

RN 134398-51-9 ZCA
CN Cobalt lithium manganese oxide (Co_{0.6}-0.98Li_{0.8}-1.4Mn_{0.02}-0.4O₂)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	0.6 - 0.98	7440-48-4
Mn	0.02 - 0.4	7439-96-5
Li	0.8 - 1.4	7439-93-2

IT **134398-42-8**, Cobalt lithium manganese oxide
(Co_{0.7}-0.9Li₁-1.3Mn_{0.1}-0.3O₂)
(**cathodes**, for secondary **batteries**)
IT **134398-47-3**, Cobalt lithium manganese oxide (Co_{0.9}LiMn_{0.1}O₂)
134398-51-9, Cobalt lithium manganese oxide

(Co_{0.6-0.98}Li_{0.8-1.4}Mn_{0.02-0.4}O₂)

(**cathodes**, performance of, in lithium **batteries**
)